

THE IRON AGE

THURSDAY, JULY 31, 1890.

The Trenton Automatic Engine.

This engine, of which we present a perspective engraving and also drawings showing the principal features of the cylinder, valves and governor, is the result of several years of study and experiment in the endeavor to perfect an engine of the highest type adapted to the varying conditions under which power is required, and designed and constructed to meet the most exacting requirements and endure the hardest service. Further than this, the endeavor was to obtain all the elements of economy, including strength, simplicity, durability, correct steam distribution, and practically absolute regularity of speed. The general external features of the engine are clearly brought out in the engraving, and will therefore need no comment.

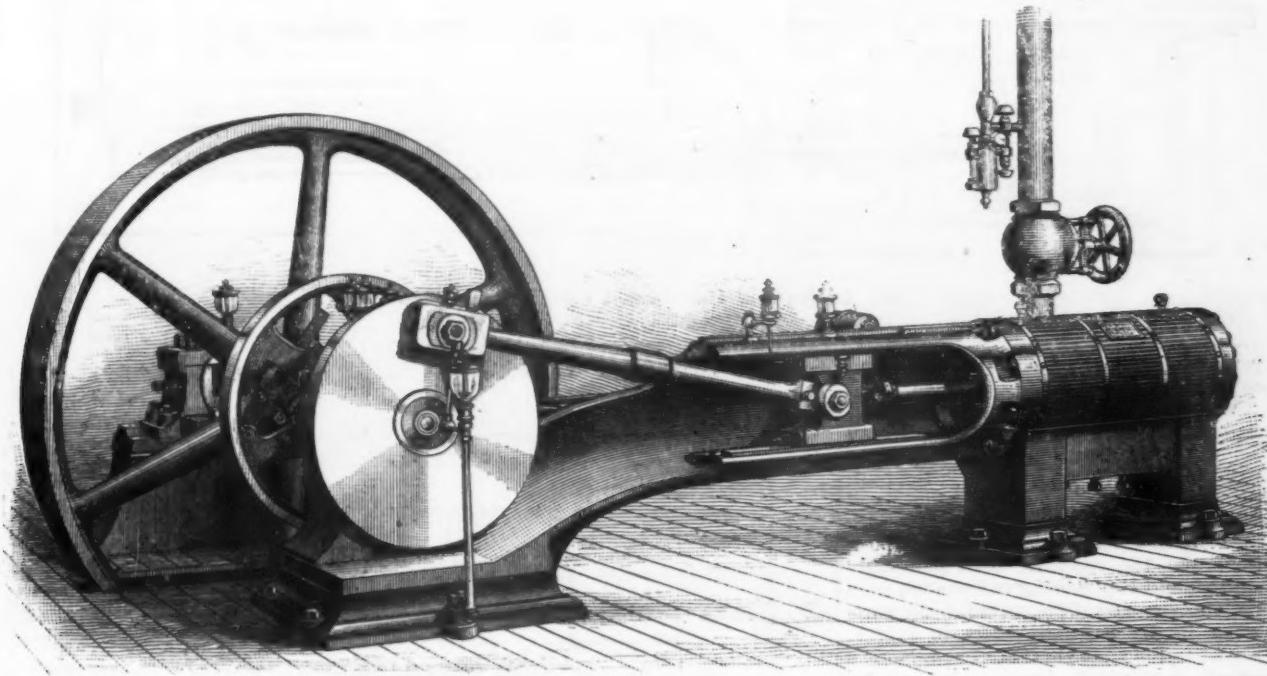
The distinguishing feature of the Trenton engine is its new and simple valve

arrangement preventing the exhaust steam from coming in contact with the valve, except at a part of its end area, which is provided with a non-conducting filling to prevent the cooling of the valve and consequent condensation of live steam. The steam passages are provided with relief valves which form a safeguard against wreckage of the engine by water. As the stuffing box and guides for the valve stem only have to be packed against exhaust steam, there is very little friction produced at these points. The cylinders are jacketed with a cast iron lagging and filled with a non-conducting material.

We will now describe more in detail the construction and operation of the valve, reference being had to Figs. 2, 3, 4 and 5. Fig. 2 being a sectional plan through the cylinder and steam chest, Fig. 3 being a vertical section through the valve and showing the rocker arms in ele-

gear is formed the usual stuffing box for the passage of the valve stem.

One of the most essential points in the construction of this valve is in the outboard bearing, which is shown, enlarged, in Fig. 4, and the use of which entirely obviates the wear which was found to result from the peculiar movements of the valve and stem. The head of the valve case is detachably secured by hooked bolts, and is provided with a cylindrical sleeve placed parallel with the valve stem. Mounted in the sleeve is a two-part bushing of such interior diameter as to properly fit the valve stem. The lateral edges of the two parts of the bushing do not touch, but are arranged to leave spaces to permit of the lower half of the bushing being, from time to time, adjusted to compensate for the wear which takes place between the lower half and the stem. This adjustment is provided



THE TRENTON AUTOMATIC ENGINE.

gear, by which a single valve having two independent movements is made to effect the same distribution and economy that in other standard engines can only be secured by separate admission and exhaust valves. This result is reached by the use of a cylindrical valve having a simultaneous rotary and sliding movement, the rotary motion operated by a variable eccentric admitting and cutting off the steam by longitudinal ports, and varying as the sensitive governor responds to changes in the load or steam pressure. The second or sliding motion is effected by a fixed eccentric, and gives a positive exhaust over the ends of the valve, not affected by the action of the cut-off eccentric. The cylinder and valve chest of the smaller sizes are cast together, but for constructive reasons the valve chests of the larger sizes are cast separate and bolted to the cylinder. The steam ports are very short, although ample in area, thus reducing the clearance or waste room to a minimum. The valve chest has exhaust pockets at both ends which lead together underneath for the exhaust pipe connection, this

vation. Fig. 4 being an enlarged view of the outboard bearing for the valve stem, while Fig. 5 is a cross section through the valve. As previously mentioned, the reciprocation of the valve regulates the exhaust while the oscillation of the valve admits and cuts off steam in a well-known manner through ports shown in Fig. 2. Both admission and exhaust ports are also shown in Fig. 3, the former being arranged longitudinally or parallel with the axis of the valve, while the latter consist of annular openings. It was found that where the steam admission ports of the valve were formed of long slits or openings, that an unequal wear and chattering of the valve in its seat took place, due to the slight expansion of the hollow shell of the valve and the forcing out of the edges of the ports thus formed. This was obviated by forming the ports or the port openings with cross bridges, as shown in Fig. 3, which prevented the undue expansion of the valve at the central point and prevented the forcing outward of the edges of the port, and did away with the faults mentioned. At the end of the valve case next to the valve

for by screws, which are tapped into the under side of the sleeve and bear against the lower half of the bushing. Fitted in the inner end of the sleeve is a ring, having between it and the bushing a space for the reception of packing. The sleeve and bushing are of such length as to permit the necessary reciprocation of the valve stem. This bearing serves to balance the valve stem by exposing to the outer air at this end of the valve case an equal area to that of the cross section of stem at the opposite end.

The valve is light, perfectly balanced and has large bearing surfaces. As it is continually changing the direction of its movement and the surfaces in contact, there is no appreciable wear even after long service.

The rotation of the valve which controls the admission and cut off is produced by a bell crank hung on the main rocker arm, and operated by the shifting eccentric B, Fig. 3 of the shaft governor. The rotation of the valve also partakes of the movement of the fixed eccentric C, as given to the main rocker arm, and this

peculiar combination of movements produces a very rapid opening of the steam ports, which stand nearly at rest up to near the cutting off point, as regulated by the governor, after which the closing of the ports is equally rapid, giving a straight steam line and a decisive cut off, as shown by the indicator card we herewith reproduce. It will readily be seen that the distinguishing features of the admirable steam distribution of the four-valve Corliss engine are in this engine secured by the use of a single valve. The wearing surfaces of the eccentrics are spherical in form, being a zone of a perfect sphere of the exact diameter of the eccentric, and hence they act as a ball joint, and cool, quiet running is secured, independent of

getting a uniformly increased and reliable degree of resistance from the springs as they are compressed. This is effected by pivoting each seat of the spring so that it may turn as the spring changes position, and always be in line with it. Combined with the seats is a projection of the same diameter as the interior of the spring, and extending for some distance into the spring to maintain it in line. The spiral compression springs are held between and tend to force apart the bearings or seats, as shown in the drawings, which also show the method of connecting the springs with the weights and disk. An important point is here gained: by suspending the compression spring between two points of attachment

offers a long stroke, low rotative and high piston speed, high steam economy, close regulation and the advantages of simplicity of its parts, which are all easily accessible. These engines are made by the Phoenix Iron Company, of Trenton, N. J., in sizes varying from 25 to 600 horse-power, and are built non-condensing, condensing, compound condensing, and compound condensing tandem style or in pairs.

The Colorado Midland Tunnel.

A piece of railroad tunneling of more than common interest is about to be undertaken by the Colorado Midland Railroad Company. This line was built about

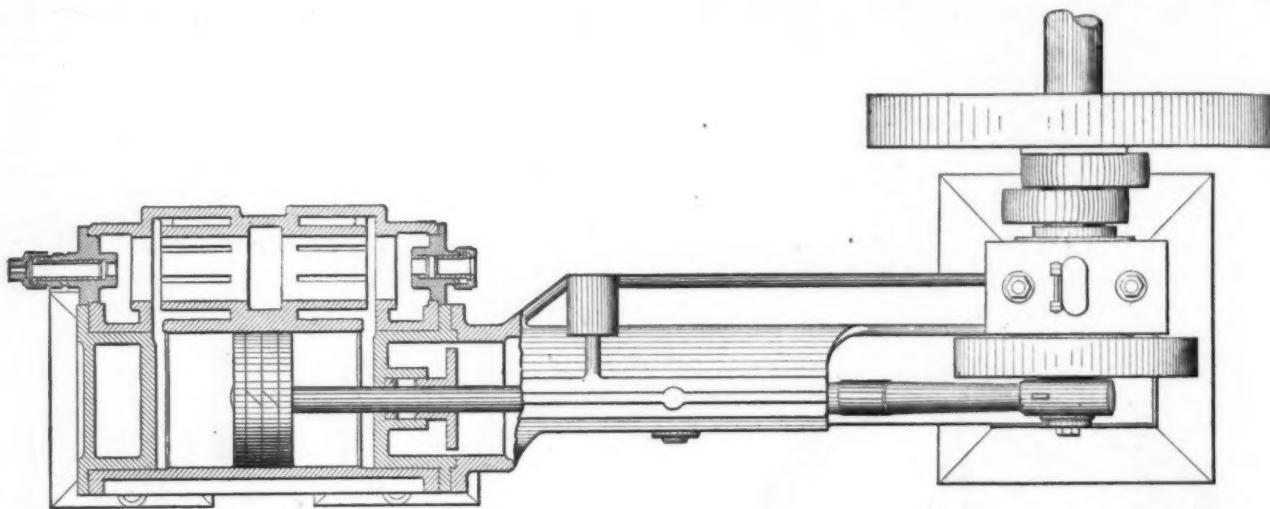


Fig. 2.—Sectional Plan through Cylinder and Steam Chest.

perfect alignment of eccentric rods and connections.

We now come to the governor, which is represented in Figs. 6, 7 and 8, Fig. 6 being a side elevation of the governor with the centrifugal weights in the position they occupy when the engine is at rest, Fig. 7 being a similar view but with the weights shown in their outermost position, and the eccentric correspondingly shifted, and Fig. 8 being an elevation from the opposite side of the governor, the parts being in the position shown in Fig. 7. Keyed to the main shaft of the engine is a wheel upon which are cast ways to receive and guide a reciprocating slide, in which an eccentric is made. The slide and eccentric have an opening or slot parallel to the ways through which the shaft shown in section passes, and which is of such length as to permit of the reciprocation of the slot and eccentric across the shaft. The slot is at one side of the eccentric, and extends at an angle to those radii of the eccentric in which lie the points of greatest and least eccentricity. The result of this arrangement is that, as the eccentric is reciprocated transversely to the shaft and the latter occupies different positions in the slot, both the degree of eccentricity and consequently the travel of the valve is changed, and also the position relative to the piston crank of the radii of greatest and least eccentricity, which correspondingly regulates the lead of the valve. As is usual with this class of governors, the centrifugal tendency of the weighted levers is opposed by springs, the force of which may be regulated so as to equal the centrifugal force of the levers when the engine is running at the desired speed. The springs and their bearings are so arranged that the resistance is presented in a line parallel to their axis. This arrangement has an important effect in keeping the springs in line and preventing their buckling outward, and in

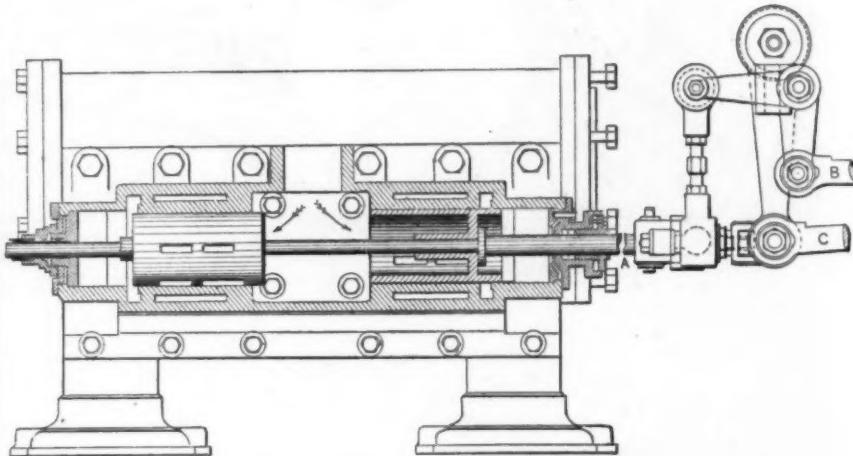


Fig. 3.—Vertical Section through Valves.

beyond the opposite ends of the springs, it is not liable to be swung out of position by centrifugal force, as would be the case if both points of attachment to the lever and the wheel were at the same end of the spring. The adjustment between the centrifugal force of the weights and the resistance of the springs is so accurately calculated that a variation in speed of 2 per cent. will cause a movement to the weights through their extreme range, varying the point of cut off from nothing to full stroke, and thereby insuring regularity of speed under the greatest variations of load.

The proportions of springs, crank shaft, crank pin, connecting rod, &c., are the largest yet adopted, the castings are heavy and the frame is designed to resist, in the most direct manner, the strains brought upon it. For large powers this engine

three years ago into the mountains from Colorado Springs, reaching Leadville, Aspen and Glenwood Springs, and it is the only standard gauge road running into the mountain country. The road has been built in an unusually solid and substantial manner. In making connections between the various points on the line, very heavy grades and sharp curves were necessary. It is to do away with one of the worst of these places that the present tunnel is being built. After leaving Leadville, which is at an elevation of 10,025 feet, the road runs around the mountains for a distance of 12 miles, reaching Busk at a height of 10,900 feet. From this point the road zigzags up the face of the mountain for a distance of five miles, to reach a point 500 feet above Busk. On this part of the trip long lines of snow sheds are erected to protect the track, and in these drifted snow lies the

year round. The old tunnel here pierces the Continental Divide at an elevation of 11,528 feet, which is within 30 feet of the height of the Alpine Pass, on the Union Pacific road, the highest in Colorado. This tunnel is about 3000 feet long. It is proposed to begin the new tunnel at Busk. Its length will be 9350 feet, and the highest point reached will be $10,947\frac{1}{2}$ feet, thus effecting a saving in altitude of $580\frac{1}{2}$ feet. The curves on the old line are sharp, the maximum being 16° , while on the new line the maxi-

remarks that it will be mainly an agricultural exhibition, as the foreign representation will not be extensive.

The Mechanics' Fair in Boston.

An announcement of special interest to exhibitors of machinery at the Mechanics' Fair, to be held in Boston in October and November, is one to the effect that the managers have made arrangements with the Thomson-Houston Electric Company,

value to both exhibitors and visitors. A fine exhibit of engines, stokers, steam loops, &c., will be made by Westinghouse, Church, Kerr & Co. An exhibit of an air engine will be shown by the Woodbury Merrill Patten Air Engine Company.

Seagoing Steel Barges.

Two steel barges of the peculiar design of those lately brought into use in the trade on the great lakes are being built by Handren & Robins, at the Erie Basin Dry Docks. One of them is nearly completed and the other will be finished in about a fortnight. They are lying in the ship-yard connected with the dry docks, and the firm is constructing them for the American Steel Barge Company, to be used by the Siga Iron Company, of Philadelphia. They are the first of the kind built on this coast, and are to be used, it is stated, for the transportation of material in bulk on the ocean. The barges are large shells of steel plates, 12 feet by 5 feet, made water tight, and are 190 feet long, 32 feet wide and 20 feet deep. The dead weight capacity of each at low draft of 15 feet is 1500 tons. The barges' decks are of a "turtle-back" shape, and the hulls taper off bluntly at bow and stern, presenting a cigar-shaped appearance. The blunt ends of the barges are protected by a pad

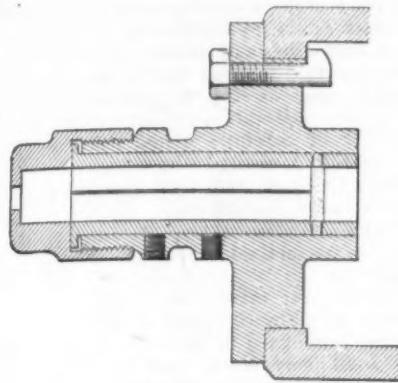


Fig. 4.—Outboard Valve Stem Bearing.

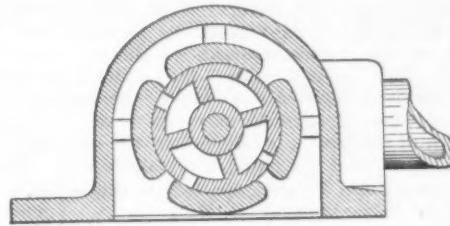


Fig. 5.—Cross Section through Valve.

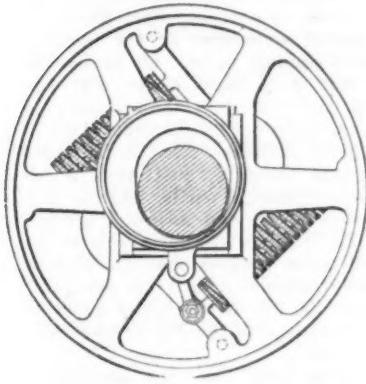


Fig. 6.

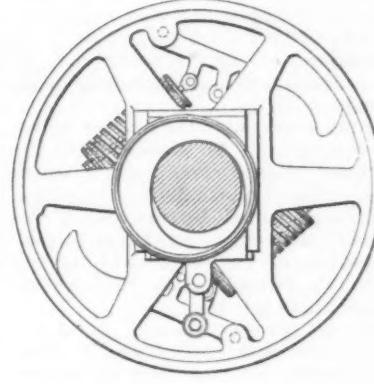


Fig. 7.

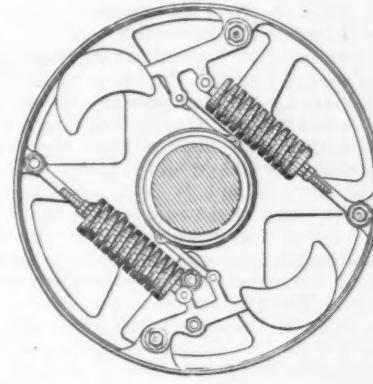


Fig. 8.

The Governor.

mum is only 6° . The maximum grade of the old line is 3 per cent, and the new is only 1.4 per cent. The length of new line required is 3.25 miles, and this replaces 10.18 miles of old line, effecting a saving of 6.93 miles. The range of mountains here crossed is the Saguache. The crest is about 12,000 feet high. These tunnels are notable in that they enter the mountain on the Atlantic Slope and leave it on the Pacific Slope. The east end of the tunnel is driven through gray granite, and it is thought that it will extend the whole length through the same stone, although there is a possibility that it may run into porphyry. The west end of the tunnel is driven through wash or sediment washed down from the hills. At this end the road crosses a corner of Lake Ivanhoe, which nestles in the hills at an elevation of 10,942 feet. The section of the tunnel is 15 feet wide and $21\frac{1}{2}$ feet high. The cover over the top of the new tunnel is 1128 feet. The contract has been taken by M. H. Keefe, of Helena, Mont., who built the Wicke tunnel on the Montana Central Railroad. Work is to be commenced on August 1, and it is expected that 20 months will be needed to finish the contract.

General Goshorn, of World's Fair celebrity, predicts a financial success for the Columbian Exposition in Chicago, but

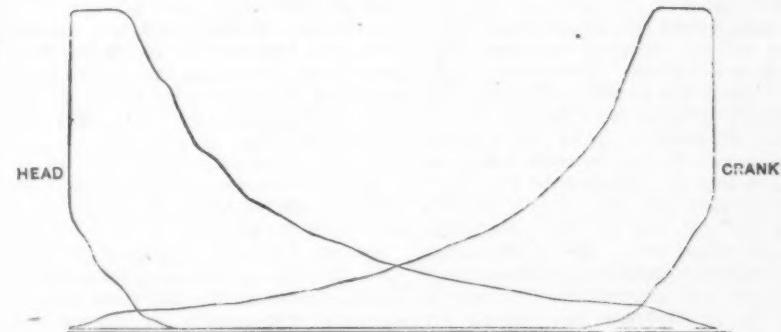


Fig. 9.—Indicator Card.

by which electric motors will be furnished for machinery in all parts of the building. This will be of great convenience in the arrangement of many exhibits, for certain machines which heretofore were necessarily placed near the shafting may now be given more desirable locations elsewhere, and perhaps some of the lighter machinery may even be placed in Grand Hall. The general interest of late years in the matter of heating stores, offices and houses by steam or water heaters is indicated by the large number of entries of this class of exhibits, and the competition will undoubtedly be sharp and of great

value to both exhibitors and visitors. A fine exhibit of engines, stokers, steam loops, &c., will be made by Westinghouse, Church, Kerr & Co. An exhibit of an air engine will be shown by the Woodbury Merrill Patten Air Engine Company.

ing, the barges will simply drift until anchorage is found, safely riding out heavy weather at anchor. At stem and stern there are water tight bulkheads with compartments for water ballast for trimming purposes. The bulkheads are 20 feet from each end and give an entire hold of 137 x 32 x 17 feet. The barges are fitted with 12-inch duplex steam pumps. Communication between the fore and after part of the barges is made across the deck through the turrets, and for use in making the passage across the deck steel wires on steel stanchions, 3 feet 6 inches high, afford a hand rail. The barges have a protection compartment at the bottom 3 feet deep, and the bottom of the hold is protected by two thicknesses of flooring of 2-inch pine and 2-inch oak. There is no external keel, the bottom being of flat plate. The barges are a little smaller than those used on the lakes.

Standard Thickness of Boiler Plates.

At the Pittsburgh meeting of the American Boiler Manufacturers' Association a report was adopted defining the chemical and physical requirements of steel boiler plates. The committee was continued, and instructed to supplement this report by recommendations in regard to standard thickness of metal. This report, which we present in the following, was handed in at the recent meeting held in New York, and while it offers no standard, it goes over the ground to be considered:

There are at present two principal standards fixing the thickness of metal for boilers for different pressures in use in the United States. One is that fixed by the marine laws, and governs the construction of boilers on all navigable waters of the country, and is generally known as the "Government rule." The other is that fixed by the ordinances of the city of Philadelphia, and is also in use by at least one of the large boiler insurance companies. The mathematical basis for the two rules is the same, and they differ simply in the practical method employed to determine the proper factor of safety. A simple mathematical deduction shows that a circle seam has just one-half the strain to carry as a longitudinal seam under the same pressure and with the same thickness of metal. Another simple and practical investigation shows that a spherical head is strained in the same manner and to the same extent as a circle seam. This is true strictly when we consider these seams as solid metal. Therefore as long as we neglect the question of weakening by the rivet holes we have the simple rule that the thickness of metal for a longitudinal seam is formed by multiplying the radius, or half the diameter of the shell, by the pressure per square inch, and dividing the product by the permissible strain per square inch. For a circle seam or for a spherical head the thickness need be only one-half as great, *i. e.*, it may be found by multiplying the pressure per square inch by the radius, and dividing by twice the permissible strain.

A spherical head which has no rivet seam across it may be proportioned according to this rule, simply taking the precaution to add as much metal in reinforce rings as is cut away by any openings, such as handholes, manholes, &c., which may be cut into it. Of course the longest axis of such hole must be taken in fixing the necessary dimensions of the reinforce ring. Where it becomes necessary, as in large rendering tanks, &c., to make this spherical end in two or more pieces, enough additional thickness must be given in each case to exactly counteract the weakening by rivet holes, either in a single or double riveted seam. In a cylindrical shell it is generally safe to neglect the circle seam entirely, since (even if the

rivet holes should cut away half the metal), the circle seam would still be as strong as the solid metal of a longitudinal seam before punching.

It is on the question of proportioning for longitudinal seams that the Government rule and the Philadelphia rule vary. The Government rule was evidently based on certain fixed rules for the pitch and diameter of rivets; but as promulgated in Government publications this is lost sight of, and it becomes legally applicable to any style of riveting. As it stands, it allows us to use as the permissible strain in the metal one-sixth of the tensile strength of the steel or iron for single riveted seams, and 20 per cent. more, or one-fifth of the tensile strength, for double riveted seams. The Philadelphia rule limits us to one-fifth of the tensile strength of the material, but figures only the material left standing between rivet holes. Under this proviso it permits us to go to one-fourth of the tensile strength on the net metal, provided the metal will stand such tests as we may always expect from metal entitled to the brand A. B. M. A.

When working under the Government rule the tendency will be to rather too close rivet spacing; when working under the Philadelphia rule to rather too wide rivet spacing. It is well known that it is difficult to so proportion a double riveted seam, for heavy pressures, as to leave standing 75 per cent. of the full metal of the seam between rivet holes. When a larger percentage is attempted, as has sometimes been done under Philadelphia rules, it becomes difficult to calk the boiler, and the calking strains bear quite seriously under the heads of the rivets.

This practically fixes the limit to which wide spacing can be carried. On the other hand, the too close pitch to which the Government rules offer a temptation is practically limited by the cost of the additional punching and additional rivets. A comparison of the working of the two rules on two different seams will illustrate the matter most forcibly.

First, a 75 per cent. seam.

The Government rule would allow 12,000 pounds per square inch on the full seam, equivalent to 16,000 pounds on the net metal. The Philadelphia rule allows 11,250 pounds on the full seam, being 15,000 on the net metal. The difference in pressure permitted by the two rules is therefore between 6 and 7 per cent. in the case of the double riveted seam, with 75 per cent. of the metal left standing. There are, however, in use in the West a great many boilers, and many of them on passenger steamboats, in which the rivet pitch is 2 inches and the rivets $\frac{1}{4}$ inch. This makes the value of the seam—*i. e.*, the net metal left standing, only 68 $\frac{1}{4}$ per cent. As the Government rule ignores this factor, while the Philadelphia rule takes full cognizance of it, we have:

Second, a 68 $\frac{1}{4}$ per cent. seam.

In this the Government allowance of 12,000 pounds on the full seam brings us up to 17,454 pounds on the net metal, while the Philadelphia rule of 15,000 pounds on the net metal reduces the strain on the full seam to 10,312 pounds per square inch. That is, practically, a boiler constructed according to this Western practice would be allowed only 103 pounds to the square inch under the Philadelphia rule, while it might be placed on the Schuylkill river on a passenger steamboat and carry 120 pounds. It seems to your committee that a strain of 15,000 pounds on the net metal, where the metal is known to be of the best quality, and ruptures at 60,000 pounds, is as high as we ought to go. The Government rules evidently have a grave defect in omitting any references to rivet pitch and rivet diameter.

As the report of the committee on riveting, which was presented at the last meeting, is before the convention now for final

consideration, discussion and adoption, our committee feel that it would be futile to attempt to fix thickness of metal until after these rules have been adopted by the association. As soon, however, as the riveting question is fixed we shall be glad to figure up a complete set of tables based on A. B. M. A. steel, and on the rivet spacing and rivet diameters which may be adopted, and allowing a uniform factor of safety of four on the net metal.

We are, of course, aware that in figuring the strength of the shell on the basis of the net metal left standing between rivet holes, we ignore entirely the strengthening effect caused by the friction of the plates on each other and the tension in the rivets transmitted through the rivet heads. But until some careful experiments be made by this association on boiler shells, constructed of carefully tested material and of carefully measured dimensions, the strengthening effect from rivet tension is only a matter of conjecture.

The thickness of metal for flat surfaces depends on the method of staying. Stays generally fail by the stripping of the thread on the stay itself. By rough rule of thumb the distance apart, or pitch of stays, has been fixed to meet this for ordinary solid stay bolts. But by using hollow stay bolts of large diameter we can so increase the amount of metal in the thread as to secure it against stripping, and thereby make it perfectly safe to use for larger exposed surfaces the same thickness of metal which had been fixed for much shorter exposures on the basis of such solid staying bolts. Of course the thread will strip much easier with the grain on the stay bolt than across the grain in the plate. The thickness of metal for the plate should be fixed on the basis of its tensile strength, just as it is for cylinders or spherical shells, and the stay bolts proportioned and adjusted accordingly. For it is a well-known rule to all practical boiler makers that the thinner the metal (compatible with due strength), the longer the life of the boiler under its varying stresses, and the better the calking will stand.

We recommend that the association should also make tests in this direction, based on the above consideration, which radically differs from those on which stay bolt tests have generally been made.

(Signed), E. D. MEIER, Chairman.

VIRGINIA IRON NOTES.

Representatives from the Rockbridge Company, under whose promotion the thriving young industrial city of Glasgow has grown so rapidly, have gone to England to confer with a syndicate which proposes to establish at Glasgow a steel plant and steel car wheel works, which will cost a large sum of money.

The Goshen Rolling Mill Company have been incorporated at Goshen Bridge, with \$300,000 capital stock. The officers are Henry Stephen, president, and J. Y. Heckman, secretary. This company is backed by Philadelphia capital. The construction of the plant will not be long delayed.

The Virginia and Tennessee Coal and Iron Company control 50,000 acres of coal and iron lands in Wise and Dickenson counties, and will develop.

At Roanoke the Prudential Investment Company have been formed to deal in real estate and to build furnaces, rolling mills and other iron manufacturing plants. The company have an authorized capital of \$20,000, and the officers are S. S. Brooke, president, and Walter MacDonnell, secretary.

At Luray a foundry and plow manufacturing company have been formed with \$25,000 capital stock.

Samuel L. Moore & Sons, of Elizabethport, N. J., who have signed a contract to build the 800-ton practice cruiser for the Government, laid the keel of the first iron vessel at their yard last week.

Cultivating Mexican Trade.

Merchants from Sonora, Mexico, have been visiting Chicago and St. Louis the past week, under the auspices of the Santa Fé Railroad. Until the year 1883, when the Sonora Railway, the Mexican feeder of the Santa Fé, was completed, Western Mexico had no place on the maps of American explorers. That market was tributary in its entirety to Europe. Since then 50 per cent. of this trade has been diverted to the United States. The Santa Fé Railroad conceived the idea that by introducing the Mexican merchants to American wholesalers and exporters and acquainting them with American products, manufactures and prices, at least three-fourths of the remaining 50 per cent. of European business might be secured for the United States, with corresponding advantage to the railroad. The result will surpass all expectations if the expectations of members of the delegation are an indication. It has been a matter of course to buy certain lines of goods in Europe, and American exporters have likewise held to the opinion heretofore that they could not compete with Europe in certain directions owing to the high Mexican tariff. That these conclusions were based on false premises has been fully demonstrated this week to the satisfaction of both parties in interest.

American commercial travelers have seldom visited the cities of the States of Sonora and Chihuahua. These merchants during their stay in Chicago have not only purchased heavily, but have earnestly requested that representatives of certain houses be sent to them next fall. Speaking of the particular lines of goods which it has been discovered can be imported more cheaply from this country than from Europe, a member of the delegation said: "Our furniture has always come wholly from Europe. That most in use is the rattan from Vienna. We have purchased some furniture here entirely new to us and surprisingly pleasing in style. We have heretofore had no conception of what furniture really is in this day and generation, and how cheaply it can be bought. We have purchased a great many carriages and buggies this week in Chicago. I may mention pony carts, buck-boards, canopy buggies, and light market wagons as quite new to our people. You would smile to see the cumbrous vehicles that pass for market wagons with us. But it is in the line of hardware that we have made the most important discoveries. We have seen many articles of hardware that our people have never known and that the European exporters have never offered us. There are a thousand little things in household goods and kitchen ware familiar to American homes which we have not seen until now. In the line of lamps we were greatly astonished, accustomed as we have been to the plainest and most inelegant articles of that kind."

The union of the five republics of Central America, which appeared probable some time ago, is not now likely to be brought about, at all events by peaceful means. Four of the republics are believed to be pretty well in accord with each other, but the fifth, Salvador, is proving a troublesome quantity since the death of General Menendez and assumption of authority by General Ezeta, who is supposed to represent the national idea of individuality and independence. The people of Salvador suspect the Gaumalans of a desire to interfere with their internal affairs, and a very hostile feeling has been engendered between the two. According to latest telegraphic advices, a battle has actually been fought. According to a dispatch dated La Libertad, Salvador, 22d inst., the killed numbered over 200, with many

wounded. The two republics immediately concerned have made considerable industrial progress during the past few years. Guatemala, with about one million and a half of inhabitants, raises abundant agricultural products and manufactures, and exports sugar and fabrics of wool and cotton to neighboring countries. Salvador has about 600,000 inhabitants, is well cultivated and productive, with numerous sugar refineries, wool, silk and tobacco factories. Our trade with Central America, although small, is of a progressive character. During the fiscal year ending June 30, 1889, our imports from thence were valued at \$8,414,619 and exports at \$4,146,510, against imports valued at \$8,313,469 and exports at \$1,729,215 ten years ago.

NEW ENGLAND MISCELLANY.

A corporation known as the Coggeshall Mfg. Company, with a capital stock of \$300,000 and a paid in capital of \$300, have been organized at Auburn, Maine, for the purpose of manufacturing machinery, spindles, &c. The officers are: President, Edward Lyon, Jr., of Melrose, Mass.; treasurer, E. C. Lawrence, Bos-

The new shops at the Bath Iron Works are about completed, and the foundation for the keels of two cruisers are about laid.

The Westinghouse Electric Company were recently awarded the contract for a central station plant at Barnsley, England, with a capacity of 6000 incandescent and 100 arc lights.

The Wheelock Engine Company, of Worcester, are crowding the work in every department in their large factory. They have several orders on hand for large engines.

English parties from Brazil, were in Lowell the past week ordering machinery for a new cotton mill in that country to be established at Cuxias. This is the third order that has been placed in New England for cotton machinery to go to South America within a short time. In addition to this the Fall River Machine Company, Fall River, are to furnish the spinning frames; George W. Payne & Co., of Pawtucket, R. I., the quillers, and the Foster & Atherton Machine Company, Pawtucket, R. I., the cotton openers and lappers.

It is reported that the Bullard Arms Company, of Springfield, are to close up their business and lease the factory building for other purposes. The Warwick Cycle Company, have looked over the property with a view to locating their plant there. The factory is three stories high, and besides its main floors of 145 x 40 feet has an ell 40 x 60 feet in size and out-buildings suitable for an electric light plant. It contains about \$50,000 worth of tools and machinery, a portion of which may be disposed of to the School of Technology at Worcester. It is expected that some definite action toward a dissolution will take place soon.

The recent item in reference to the town of Gardner offering inducements to the Fitchburg Steam Engine Company to locate there was occasioned by their acceptance lately from J. H. Daniels of a plot of about three acres of land near the Cleghorn Mills, Fitchburg, on which to remove their rapidly increasing business.

A new company, known as the American Brass and Rivet Company, has recently been organized at Westfield, Mass., in connection with the firm of Williams & Van Dusen, manufacturers of whip buttons, ferrules, &c. The capital stock is \$50,000.

The Lockwood Mfg. Company, of East Boston, manufacturers of machinery, will make extensive additions and improvements to their plant on Summer street. The old wharf will be torn up and replaced by a new one 55 feet in length and 20 feet wide.

Subscribers to the \$40,000 for buying the plant of the Westfield Plate Company, at Thompsonville, Conn., a deal recently fallen through, are to investigate another manufacturing enterprise for the purpose of taking stock in it and securing its removal to Westfield, Mass.

The Hudson Iron Company are erecting a compressor plant at the Leeds ore mines near West Stockbridge.

The work of rebuilding the foundry building of the Atherton Machine Company, at Lowell, recently destroyed by fire, will begin at once, as soon as the insurance is adjusted. The building covered about 10,970 square feet, and the loss is estimated at about \$28,000. Quite a number of the patterns belonging to the company were destroyed, but the principal loss was on the large number of molding flasks.

The building was burned flat, and the officials consider themselves lucky in having saved the main buildings. The whole plant is insured in the Manufacturers' Mutual Company upon a blanket policy of \$270,000.

The deserted mills of the Old Colony Iron Company, at Taunton, stand a good chance of being occupied again. Since the plant was shut down several manufacturing concerns have looked over the property, but nothing definite has ever resulted. It is stated now that expectations are most promising. One of the largest iron manufacturers in Boston has been in East Taunton recently and inspected the concern. He contemplates the manufacture of horse shoes, and the mill was found to contain much machinery that is useful in the manufacture of these.

The preparatory work on the steel cruiser to be built at Loring's City Point Iron Works is progressing favorably. Large houses and shops have been constructed, and tools specially adapted to the work required have been invented and are being rapidly constructed. Richard Lavery, the mechanical engineer of the works, has had an opportunity of producing several machines that will effect a material saving in time and labor. He has devised a new furnace for heating the frames that require bending and shaping, also a machine that will bend the frames cold, where they do not require shaping. Also a peculiar shear machine which will cut steel plates up to an inch in thickness on an inner circle—something never before accomplished. Heretofore it was necessary to drill holes and cut away between. In England they use a hand saw, on the principle of a back saw, for the purpose, but it is not as rapid as the shear. Overhead Mr. Lavery has a patent traveling crane of his own invention, capable of carrying easily and quickly a weight of 5 tons. The frames for the three new light ships are now in preparation. The wooden keels are all set up in the yard; the frames are all of steel and work will proceed simultaneously on the three vessels. All this work is going on without delaying or hindering in any manner the preliminary work on the steel cruiser, the only visible signs of which yet, however, are the keel blocks which were set in position last season. A new joiner shop has also been completed under the supervision of James McIntyre, another progressive and inventive mechanic. The shop is light and airy and fitted with special tools and labor saving devices.

The Ansonia Brass and Copper Company, at Ansonia, Conn., have concluded to build a large addition to their rolling department.

Bristol, Conn., is likely to receive a new industry. The Turner Furnace Company, now located at Meriden, are contemplating a removal to Bristol. The company manufacture a patent furnace and have been working on a small capital which it is desired to increase as well as the facilities for manufacturing. Several subscriptions for the necessary capital to insure their location have already been pledged.

A new cupola has been bought by the Russell & Erwin Mfg. Company, at New Britain, Conn., for their foundry, the one now in use having proved too small.

The plant of the Upson Nut Company, at Unionville, Conn., has risen from the ashes of the former extensive buildings. At one time it looked as though Unionville was to lose this industry, but efforts on the part of the citizens were successful in retaining it. The main building of the plant is completed, and two large freight elevators are now being put in. One of the two large oil tanks has been filled with oil, which is to be used as fuel in the forges. The piping in the main building is nearly finished, and machinery is being placed as fast as it can be got ready.

The demand for cast iron pipe has been unusually heavy of late, and improvements are being stopped in many places, on account of the inability of the pipe foundries to keep up with their orders. A great deal of land in the vicinity of Chicago is piped for water, gas and sewers, by the owners of lots who find them more salable when thus supplied. Work of this kind has been stopped for lack of pipe. A similar scarcity of hydrants is reported by those in the trade. A pipe foundry seems to be needed in that locality, in view of the heavy consumption annually.

The Pomeroy mill of Cartwright, McCurdy & Co., has been put in thorough repair and has been started. Cotton ties and fine hoops are the specialties manufactured.

Electric Elevator.

With the rapid introduction of electric light and power stations into nearly every city and town in the country, a source of power has been made available which, under certain circumstances, is unsurpassed for cheapness and reliability. Particularly is this the case where the work to be performed by the power is of an intermittent character; and we, therefore, find that electricity is most admirably adapted for the operation of elevators where the service required is certainly non-continuous. Otis Brothers & Co., of New York, whose freight and passenger elevators have been for so many years well-known and widely used, have now placed upon the market an electric elevator, which is well suited to many places where it has heretofore been impracticable to use such an apparatus. The winding machinery and safety appliances, including the safety governor, the gravity wedge safety, the automatic stop motion and the slack cable stop, and also the devices for controlling the movement of the elevator car, are such as have been constantly built by the above concern for the past 25 years. The elevator proper, therefore, contains no experimental features. The Eickemeyer motor, used in combination with this elevator, stops and starts it with a gradual movement, consumes power only in proportion to the load and only when the elevator is in use, thus effecting the greatest economy in consumption of power. The

segment gear controlling a switch. An interesting and valuable improvement is here introduced, which notifies the operator when the switch is at the central point and when, therefore, no current is passing through the motor. As the switch approaches the central point, due of course to the movement of the rack bar, the latter brings into operation a buzzer which sounds in the car. Further movement of the lever tending to move the switch toward the central point, and the buzzer ceases when this point is reached. Further movement in the opposite direction starts the buzzer, and still further movement and it ceases again. By this operation the operator knows by the movement of the car when the current is operating the motor, and he also knows by means of the buzzer when the current is doing its least work, and when, by a slight further movement of the lever it can be entirely cut off. Further than this, this movement is independent

Effects of the Silver Bill.

Respecting the future operation of the Silver bill, as affecting business transactions, the New York *Commercial Bulletin* says:

There is no reason to expect serious immediate derangements. From the nature of the case the dangerous results of the Silver act must work out gradually and more or less slowly, and there is the bare possibility that the risks may be partly or even wholly averted through an international arrangement that would distribute the responsibility which we have taken on our own shoulders. There is therefore no probability of any derangement of the current value of our various legal tender currencies occurring within the period covered by ordinary commercial contracts. It may possibly prove to be three or even five years before we begin to see with any distinctness and certainty our approach to the goal toward which this enactment

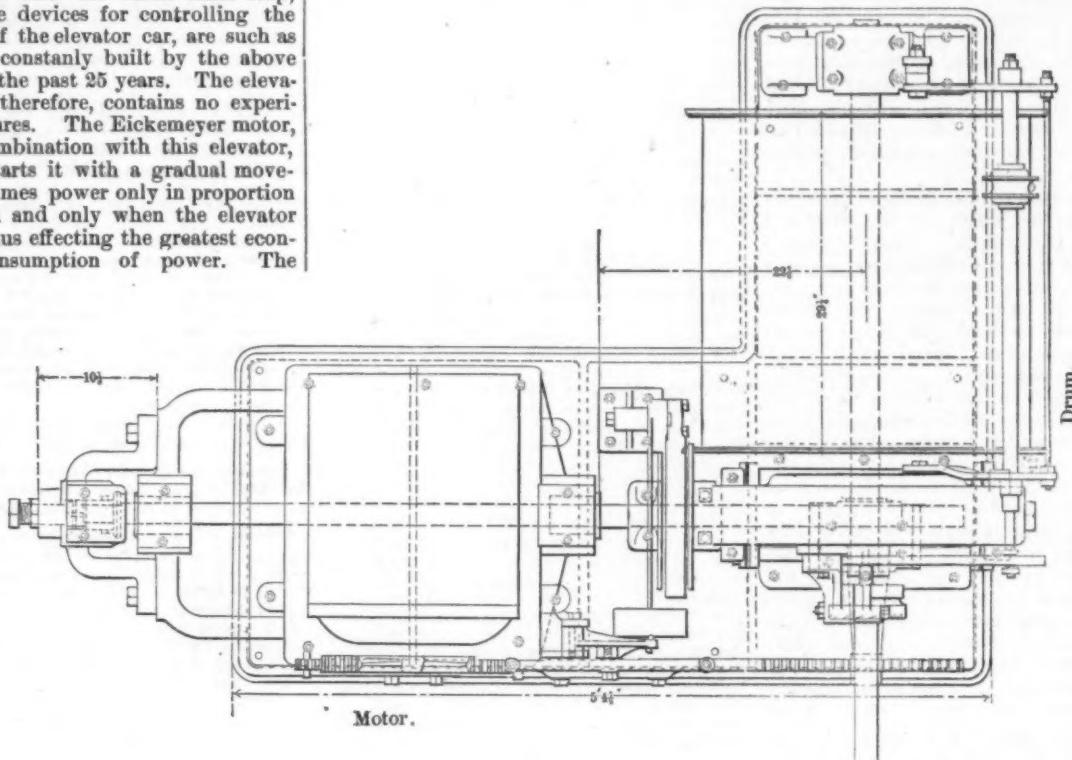


Fig. 1.—Plan.

OTIS ELECTRIC ELEVATOR.

motor is simple and accessible in all its parts, and is so protected by its unique construction as to make it completely iron-clad without adding any additional weight. It has the further advantage of a powerful field and the shortest possible magnetic circuit, which entirely prevents sparking at the commutator and affords perfect self-regulation. While it possesses a very strong magnetic field, yet there is no external magnetism in the machine, and consequently there is no danger of damaging a good watch even if placed in contact with the casing. A continuation of the armature shaft has a worm engaging with the gear mounted on the drum shaft, over which passes the hoisting rope. The elevator car is started and stopped by means of a lever operated by the attendant, this lever moving the usual rope which passes down and around a sheave mounted on a shaft, as shown in the side elevation in Fig. 2. On this same shaft is a wide pinion which engages with the rack shown in Fig. 3, which in turn operates a

of any condition of the operating rope, which, as is well-known, may be more or less affected by the weather, and since the movement of the lever is entirely controlled by the buzzer and the speed of the car, the lever may not necessarily be at a central point in order to coincide with the position of the switch. The sheave over which the operating rope passes is mounted upon a screw and its extreme movement in either direction would bring into play a clutch which would operate the rack and thus move the segment and switch to cut off the current and at the same time bring a strap brake into operation to stop the armature shaft. The slack cable stop is shown in Fig. 3. This is an arrangement which rests against the hoisting rope and which, in case the car should stop and the cable become slack, would bring into operation a simple mechanism and stop the operating machinery. These elevators are now being introduced, and so far have given the utmost satisfaction.

is destined to carry us, and it would therefore seem safe to defer the putting of trade contracts on the gold basis until that stage in the development of results has been reached. Any change from the common lawful money basis would be objectionable to buyers, and it might be a gratuitous interference with the usual course of business to enforce a new form of payment until the necessity for it was close at hand and urgent.

The case, however, is very different with contracts extending far into the future. Real estate mortgages, railroad and other corporate bonds, farm mortgages, special partnerships and all other forms of contract extending over a period of years can only be protected against the possibility of liquidation in a depreciated currency by making those obligations payable in gold coin or its equivalent from this time forward. Every prudent lender, therefore, will in future insist upon the insertion in his contract of a clause providing for payment in gold, and every corporate

bond henceforth issued will need to be made acceptable to investors by its including that safeguard.

SOUTHERN MISCELLANY.

The furnaces of the Southern Iron Works at Chattanooga, Tenn., are about completed, and it is expected that the entire plant will be ready to begin steel making in a few weeks time.

A meeting of the stockholders of the Henderson Steel and Mfg. Company will be held at Birmingham, Ala., on the fourth proximo,

owned and operated by the Pioneer Mining and Mfg. Company, it is found that 41,272 tons of pig were manufactured, of which 91½ per cent. was foundry iron.

A malleable iron plant is shortly to be added to the foundry and machine shop of the Ross-Mehan Brake Shoe Foundry Company, at Chattanooga, Tenn.

The Batesville Iron Works, of Batesville, Ark., intend adding a foundry.

The work of erecting the new rolling mill at Anniston, Ala., has been commenced.

It is stated at Morristown, Tenn., that the Land, Timber, Iron and Marble Development Company, organized recently, have purchased 25,000 acres of mineral lands in Cooke and

The Long & Jervis Foundry and Machine Company, of Decatur, Ala., has put in operation a 36-inch cupola.

All of the stock has been taken in the bar and sheet iron mill at Gadsden, Ala., and work on the plant will not be long delayed.

The buildings for the machine shop of the Southern Manufacturing Company, at Chattanooga, Tenn., have been finished, and the machinery is all in position. The company contemplated commencing work August 1.

Work on the new Philadelphia furnace at Florence, Ala., is progressing rapidly. The underground flues are nearly completed and the hull of one of the stoves is about finished.

No. 1 furnace of the Fort Payne Furnace Company, at Fort Payne, Ala., having been completed, will go into blast shortly.

Of the four furnaces at Anniston, Ala., owned by the Woodstock Iron Company, only one is now in operation. The three that are idle have been undergoing various repairs of late. No. 1 charcoal furnace has been refitted with new boilers and new hot blast oven. No. 2 charcoal, the one in operation, has had a good record. It turned out 370 tons of car wheel iron inside of seven days, and during its last blast it made 14,400 tons in 67 weeks. On the present run it has turned out 13,400 tons.

Boiler making is getting to be a highly important industry in Chattanooga. The Lookout Boiler Works are now enlarging their plant and adding much new machinery. Additional space has been purchased adjoining their present works and new buildings are to be erected at once. They have been behind their orders for several months. The Walsh & Weidner Boiler Works, of the same place, have likewise had a fine run of business, and recently moved into buildings that give them double their former capacity. The Casey Boiler Mfg. Company, also of Chattanooga, are preparing to add machinery.

The work of excavation has commenced at Cardiff, Tenn., for the first iron furnace. It is to be 16 feet in the bosh, 75 feet in height, wrought iron shell resting on eight columns. It is stated that there will be three fire-brick stoves, 19 feet in diameter, 70 feet in height. These will have a heating capacity of 22,000 cubic feet of air to 150°. The blowing en-

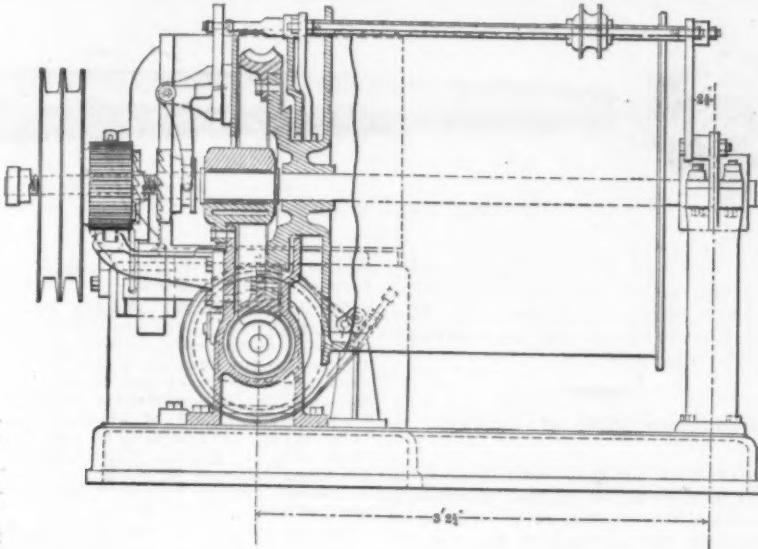


Fig. 2.—Vertical Longitudinal Section through Drum.

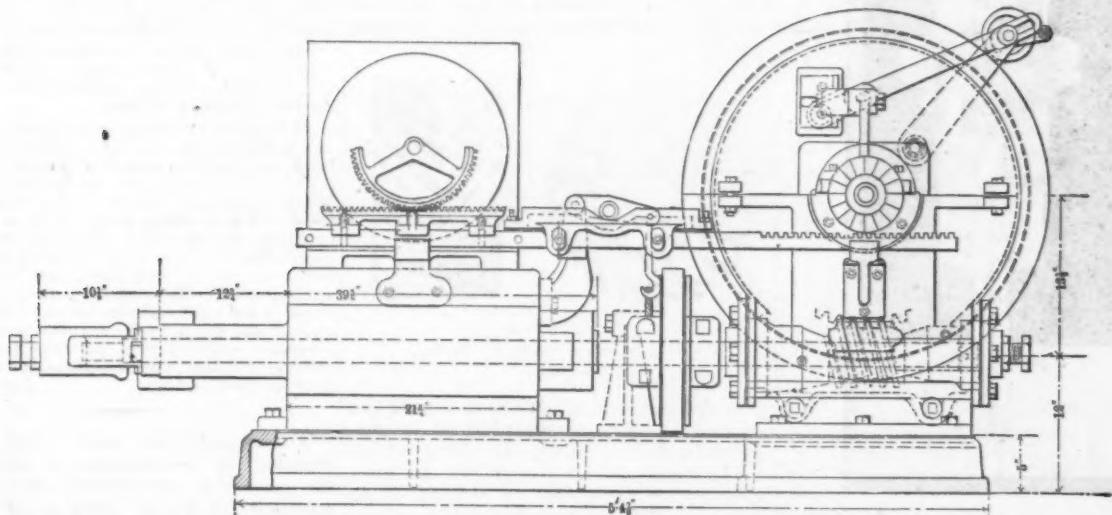


Fig. 3.—Vertical Longitudinal Section through Motor.

when it is proposed to increase the capital stock of the company from \$100,000 to \$500,000 for the purpose of constructing a larger plant. It is also contemplated by the company to have a thorough test of the steel produced by the Henderson process made in the presence of some of the most eminent and best equipped iron manufacturers of the country.

A contract has been given at Bessemer, Ala., to the Hilliker & Kiebs Building and Mfg. Company for the erection of a machine shop, 67 x 140 feet, for the Bessemer Pipe Works.

At Rockmart, Ga., local capitalists and others have organized the Rockmart Land and Improvement Company, for the purpose of developing adjacent mining properties and the building of an industrial town.

The Gulf Wire Mill Company, of New Orleans, La., have increased their capital stock to \$100,000.

At the close of the first year's work at the Thomas furnaces, near Birmingham, Ala.,

Sevier Counties, Tenn., which they intend developing.

A company are said to be organizing at Brunswick, Ga., for the purpose of establishing a lathe and tool works.

Brown & Gerard have succeeded the R. L. Brown Hardware Company, at Kosciusko, Miss.

The Piedmont Foundry and Machine Works, of Piedmont, Ala., are approaching completion and will commence operations early in August, it is thought.

Buttery & Swanson have succeeded Barles & Buttery, hardware firm, Llano, Texas.

The new plant of the South Tredegar Nut and Bolt Works, at Chattanooga, Tenn., is expected to commence operations in a few days.

The Cleburne Foundry and Machine Shops, at Cleburne, Texas, have made so many additions to their plant of late that their capacity is now twice that it formerly was.

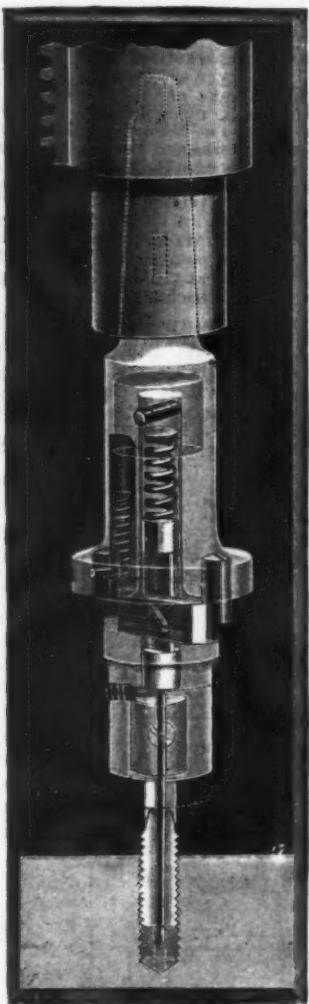
engines, two in number, will have blast cylinders 7 feet in diameter and 5-foot stroke, capable of developing 900 horse-power. There are to be five sets of boilers, having 1200 horsepower.

Frederick J. Smith, one of the stockholders of the Samson Steam Forge Company, of Chicago, has filed a bill to dissolve the company and asks the appointment of a receiver. He makes defendants Austin Cruver, D. Clint Prescott, R. H. Trumbull and Frank J. Wilson. The Samson Steam Forge Company were organized with a capital stock of \$25,000, and complainant owns \$2,500, while the remaining shares are owned by Cruver, Wilson, Trumbull and Prescott. It is charged that defendants are exercising the rights of officers without authority and have

failed to recognize the complainant as a stockholder. Other charges are made to support the filing of the bill.

Tap Driving Head.

This tapping attachment is adapted for use in a drill press or similar machine provided with a right and left belt. This device will tap through or bottom holes to any required depth without any adjustment from one size to another. In operating this driving head it is only necessary to lower the upper member until its driving lugs come in contact with the projecting drivers of the lower member, and then press slightly on the tap, when it will advance toward the bottom of the hole. The tap will continue its advance until the pin passing through it strikes the bottom of the hole, and is thereby forced



The Leland Tap Driving Head.

upward and draws in the drivers of the lower member, allowing it to come to rest while the upper member continues in motion. The driving clutch is, of course, disconnected when the tap reaches the bottom of the hole. To withdraw the tap the cross-head of the drill or other machine is drawn back until the pin, passing through the shank of the lower member, drops to its seat in the chamber of the upper member and comes in contact with the side reversing pin. Then the operating machine having been reversed, the tap is withdrawn from the hole. Any failure of the operator to follow up the lead of the tap in going in and coming out is fully provided for in a safety "trip" for the side reversing pin and the clearance between the upper and lower members. This tool is made by the Hampden Tool Company, of Holyoke, Mass.

Emery Wheel Dresser.

This tool is intended for trueing, shaping, sharpening and removing the glaze from solid emery wheels running at full speed. The cutting wheel is mounted to turn freely on a shaft in the forked end of the handle, which is held firmly to the rest in the same manner as resting a hand turning tool, the cutter being brought in contact with the emery wheel, and moved slowly back and forth across the wheel until the latter becomes true or the glaze is removed. The cutting wheel is formed of a bushed hub, in which two sets of serrated, hardened steel blades are in-

could continue. It would be no time at all before all the grain shipments of the West would be in the hands of a very few men. The new bill of lading also exacts a higher rate when goods are taken at the risk of the carriers."

A committee of 16 has been appointed which will secure the co-operation of every objector to the plan.

PROVIDENCE NOTES.

The Narragansett Electric Light Company, of this city, have contracted with the Babcock & Wilcox Company for a 1120 horse-power additional boiler, and also for the reconstruc-



The Star Emery Wheel Dresser.

serted. The tool does its work rapidly and thoroughly, and may be used until the blades have been worn to the hub. This dresser is made by the Star Machine Company, of Philadelphia.

Obnoxious Bills of Lading.

Reports from Chicago state that there has not been an action of the railroads in years which has excited such widespread attention as the attempt of the Central Traffic and Trunk Lines Associations to issue a new bill of lading on and after August 1. On the part of shippers and bankers the opposition seems perfectly unanimous. At their meeting these representatives of the Boards of Trade of 14 of the principal cities west of the Alleghanies

tion of their present Moore boilers into the Babcock & Wilcox system.

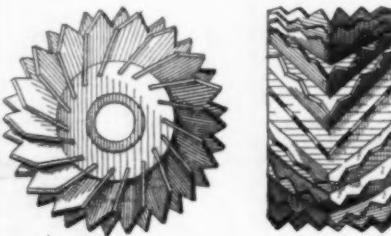
The Heaton Button Fastener Company's stock, though one of the most remunerative of any in the local market, is quiet but steady at \$125 per share. This stock pays 1 per cent. per month, or 12 per cent. per annum on a par value of \$100. It is capitalized at \$600,000, to a considerable extent, of course, in patents. This company have declared as high as 22 and 24 per cent. per annum. The present concern is a consolidation of the old Heaton Company, of this city, and the Novelty Peninsular Company, of Grand Rapids, Mich.

The iron industry in Providence is quite extensive, there being no less than 21 foundries alone within the city limits. The manufacture of textile machinery is a more important business than the majority of people suppose. One of the machine companies have just produced a new carding machine, which is claimed will do twice the amount of work of any card yet made. This new card is said to run off 135 pounds per day without being pushed.

The Corliss Engine Works are running full time. Several engines, single and compound, are under way, being constructed for mill and electric lighting purposes.

At the Franklin Machine Company's works, on Charles street, this city, work is reported brisk, with orders ahead, although the industry is not running to its fullest capacity. When running in full 500 hands find employment. The molding shop of these works is probably the largest in the city, between 15 and 18 tons of molten metal being poured off daily, but at present about ten tons is the average used. Many castings are made at this foundry for mills and workshops in this vicinity. Aside from their regular business the company make duplex printing presses, according to plans and specifications furnished by other parties.

LEONIDAS.



Side and End View of Cutter.

were present and all united in urging the continuance of the present bill of lading, or preferably, a change in form which would simply show a receipt for the shipment and an agreement to transfer it to destination. Commissioner Iglehart, of the Chicago Freight Bureau, an organization of Chicago merchants, is quoted as follows:

"We object to the proposed bill of lading in the first place because it is illegal in every one of its 11 complicated sections. It is an attempt on the part of the railroads to limit their liability as common carriers, which liability has been finally and legally established by repeated decisions of our Supreme Courts. It will create serious and extremely injurious disturbances in present business methods. Every bank in Chicago whose opinions have been asked, 41 banks in Boston alone, besides hundreds of other banks, say they will not advance a cent on the proffered bill of lading. It is impossible to estimate the immense restrictions that would in consequence be put upon trade. It would absolutely crowd out of business every shipper who could not advance the full equivalent of his shipment in cash. In other words only the extremely rich men

A company has been organized at Pueblo, Col., to manufacture and put on the market a new mining drill, recently patented by W. H. Jenkins, of Denver. It is called an electric percussion drill, and is operated by a one horse-power motor and a flexible shaft. It delivers a dead stroke blow, at the rate of 300 per minute, with a force of 400 pounds per blow. The drill can be stopped and started at pleasure, without cutting off the electric current, by releasing the shaft. It can be changed to an upper or straight down position, or any intermediate angle, in five minutes time. The drill is operated in a very small space, and a hole 25 inches deep can be drilled in a space of 27 inches, and in a line with the hole drilled. It is claimed that it is able to penetrate the hardest granite 1 inch per minute. The drill and column complete weighs but 200 pounds.

A tract of land on which to locate the shops and machinery of the Westinghouse Electric Motor Company has been purchased in Chicago for \$500,000, and the plant will cost as much in addition.

Electric Motors for Isolated Machines.

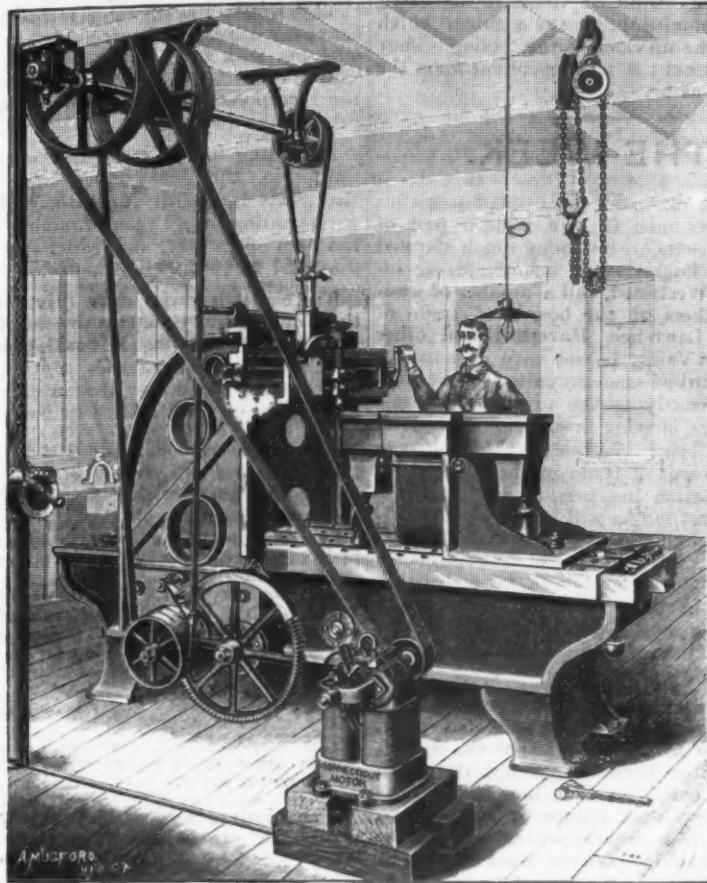
We have from time to time adverted to the fact that electric motors might in certain cases be advantageously introduced

the machine shop, and the reason, we think, is simply because its real value is not well known and appreciated. A line of shaft running empty consumes much power, and on the average the shaft-

which it is impossible to carry a line of shafting, that the electric motor could be used to advantage. In the accompanying illustrations we show a form of electric motor made by the Connecticut Motor Company, of Plantsville, Conn., and also two examples of machines operated by the motor.

Before describing this we may mention the fact that some time since at the works of the Pratt & Whitney Company it was necessary to run quite a large planer overtime. The planer required about three horse-power to operate it. The question came up as to the advisability of placing a motor in position to operate that planer, or to operate the regular engine and consume at least 10 or 15 horse-power uselessly in turning the shafting transmitting the power from the engine room to the planer. Since the motor could be operated with a loss of but 2 or 3 per cent. in transmission of power from the dynamo, it was installed and answered every purpose most satisfactorily. This is but one instance out of many where the electric motor could be used with good results, and yet its employment in the machine shop is so rare as to always excite comment wherever and whenever it is found. As an economical machine it is doubtful if it can be surpassed by any other. An output of at least 90 or 98 per cent. is guaranteed by some of the best makers, and the loss in transmission, being due to the resistance of the wire can be reduced. Dynamos are made which will convert from 90 to 92 per cent. of the power generated by the engine into electricity. From this it is evident that electricity as a motive power, when it is necessary to transmit it to some little distance from the generating source, is decidedly more economical than the usual line of shafting.

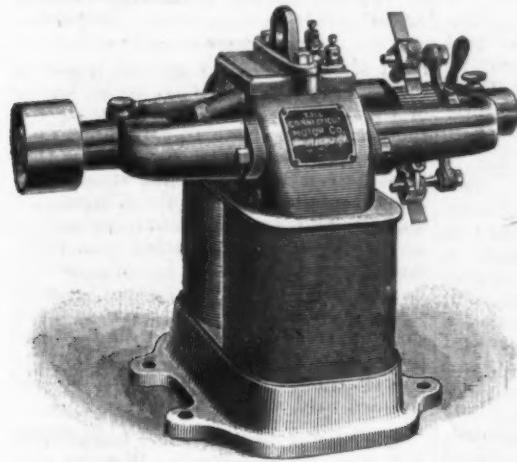
The Connecticut motor (a view of which we present, and which is made by the company above mentioned, to whom we wrote some time since asking for instances where the electric motor is used for the driving of isolated machinery) is the result of an endeavor to make a machine conforming to both mechanical and electrical ideas, and one which would not only maintain a high standard of electrical



ELECTRIC MOTOR DRIVING PLANER.

for the driving of what we have termed isolated machines, or those to which it would be difficult to transmit power in the usual way by means of shafting. The belief that this would be of pecuniary advantage is founded upon the fact that the electric motor can be, without any addition as far as machinery is concerned to that coming with the machine, placed in position, and that power without an appreciable loss can be transmitted from the

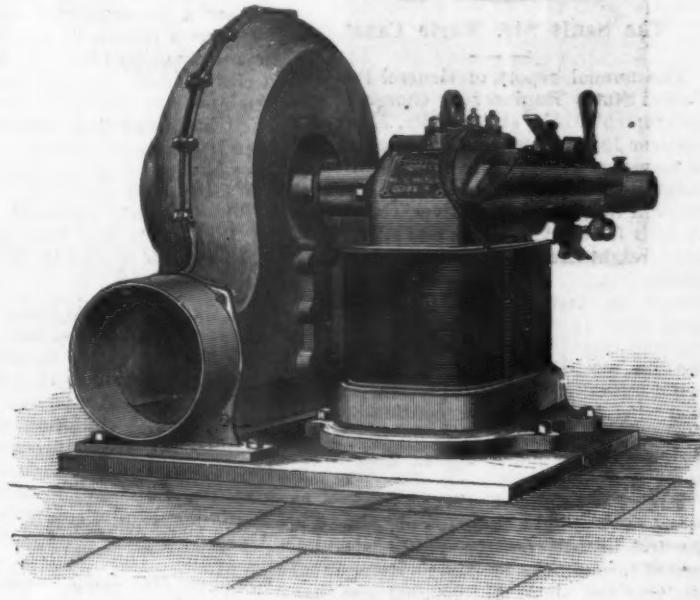
ing and countershafting in an ordinary works require at least one-third of the power generated by the engine to turn them over. In many instances it is de-



THE CONNECTICUT MOTOR.

dynamo in the engine room to the motor, provided the distance is not excessive. Although almost all large works are now provided with an electric light plant which could be used in certain cases to advantage in driving one or more motors, the latter has not yet come into extended use in

sirable to place a large new machine in such a position that the erection of shafting becomes a difficult and expensive job in the first place, and that the subsequent operation of the machine must consume a great deal of power. It is in these cases especially, and not in those in



ELECTRIC MOTOR DRIVING BLOWER

efficiency, but would also not offend against mechanical propriety. The simple horseshoe magnet has been adopted for stationary work as affording a powerful magnetic field with the least waste of exciting wire. The poles are turned upward in order to avoid the leakage of magnetic

lines of force, which otherwise would occur through the bed plate, while at the same time the breech or neutral portion of the magnet becomes a solid base on which the machine rests. The length of the magnetic circuit is short and its cross section large. There are no magnetic joints, the whole field being in one casting of soft iron. The armature proportions are medium, the length being about two diameters. The turns of wires on the armature are few and of ample sectional area. The air gap is small, the windings on the armature being absolutely symmetrical and revolving close to the polar surfaces. The shafts are of the best crucible machine steel. The journals are in all cases self-lubricating, and in all the machines have a greater bearing surface per horse-power than is usually adopted. The brush holders are of a new pattern, and have a particularly light and fine spring adjustment. The starting boxes are of iron, and as they have slate tops, are not inflammable. This device has been adopted in lieu of using any arrangement whereby the armature current is at starting sent round the field coils; firstly, because in the latter arrangement the field coils are likely to be burned out, and the whole machine rendered useless until returned to the factory for repairs, and secondly, because a better opportunity is thus afforded for building this important part of desirable materials and in a reliable manner.

The accompanying engraving of an electrically operated planer brings out the peculiar adaptation of the motor to work of this character. The second example of the motor driving a blower is one which has met with more ready adoption, since it permits of the placing of the blower in any desired position. To mount this machine it would only be necessary to secure a suitable support and lead the wires to it. Further than this, as the motor is a high speed machine, it is admirably adapted to running blowers.

We trust that we may be able in future issues to present further illustrations of the uses to which the electric motor may be put in the machine shop, and we trust our readers will aid us in this by-forwarding particulars. The subject is one well worthy of attention.

The Sault Ste. Marie Canal.

The annual report of General Poe, the United States Engineer in charge of the government works at Sault Ste. Marie, for the year 1889, shows that the average cost of transportation on the vast quantity of freight—7,519,022 tons—which passed through the St. Mary's River Canal, was 1½ mills for carrying 1 ton one mile. The total freight charges were \$8,634,246. On similar freight, for a like haul, the average charge on first-class railroads is about three times 1½ mills per ton per mile. In extreme cases it may be as low as 3 mills per ton per mile, or twice the average vessel rate. It is fair to presume, moreover, that but for the competition of lake carriers, the average rates on the trunk lines would be much higher than is actually the case.

Taking the ratio of railroad charges to vessel rates at only three to one, however, the freight bill on the products which passed through the St. Mary's River Canal last year was about \$17,000,000 less than it would have cost to ship the same merchandise by rail. This saving is so much clear benefit to the consumers and producers of the iron ore, coal, grain, flour, lumber and other products, transported by the lake vessels passing through the canal. The difference is twice as great as the gross receipts of the vessel owners. It is clear, therefore, that the classes most vitally interested in the improvement of lake channels are not the

ship owners and sailors, but the farmers of the Northwest, the flour consumers of the East, coal buyers in Minnesota, and iron mill workers and manufacturers of iron in Ohio and Pennsylvania. Indeed it is safe to say that vast industries now flourishing would be virtually destroyed for the time being, by any accident which closed the ship canal at the "Soo." They could not exist if left dependent upon the railroads alone.

THE WEEK.

Business men in the eastern part of Massachusetts are becoming much alarmed over the migration of manufacturing industries Westward, and a number of leading members of the boards of trade of Lowell, Lawrence, Haverhill and other Merrimac Valley towns, have organized a State board of trade to unite action in the way of remedying the adverse conditions which are driving away capital. It is hoped to bring together for this purpose all the boards of trade in the State. No plan of action has been devised, but one of the first moves will be to stop the railway discrimination now existing in favor of New York and against New England. The Springfield *Republican* intimates that since the West is learning to manufacture for itself, New England must find new markets in the outside world—in Canada and Spanish America.

The sewerage purification works for the city of Worcester, Mass., treated about 8,000,000 gallons a day last week, and excellent satisfaction was given. The chemical now chiefly in use is lime, which is as satisfactory and cheaper than alumina. The big 15-inch pipe, which was laid to carry the sludge pumped from the bottom of the tanks under the railroad to the land on the other side, where it is to be plowed in, was used for the first time a few days ago. The works will soon be running day and night.

Steam heating, in its application to detached buildings from a central source of supply, does not prove to be an unqualified success in a financial point of view. In Springfield, Mass., where the system has had a thorough trial, an investigation by experts results in showing that business is done at a loss. A local editor says it is significant that in every other New England city where the heating of scattered buildings from a central station has been tried, except Boston, it has sooner or later been given up as a failure. In Boston the attempt is not now made to heat buildings widely separated. Auburn, N. Y., is the only city from which anything like favorable reports of the business have been obtained.

On the maps Idaho looks small, but in fact it has 88,294 square miles. New York has only 47,620 square miles of area. Idaho's population in 1870 was 20,583; in 1880, 32,610, and is now estimated at 200,000. Its conformation is largely mountainous, with intervening tracts of fertile prairie land sufficient to support a great population. The mountains are said to be full of gold, silver and lead, and with plenty of timber and grazing land for cattle. Three railroad systems, whose branches are being rapidly extended, supply communication with the rest of the world, while the Shoshone River and its tributaries contribute navigation, fish supply and moisture.

The flood in Louisiana caused by the high water in the Mississippi river has ended, the water having ceased to run through the Morganza break. The people there are surprised at the inconsiderable damage done compared with previous years. In Iberville, one of the most exposed par-

ishes, there was a gain rather than a loss, on account of the opportunity to float logs to a market. Other parishes figure out a loss far below former estimates. It has been shown that it is necessary to have funds in reserve for future emergencies.

The Leake Pneumatic Transportation Company have been incorporated in Philadelphia with \$10,000,000 capital. Edward Vernon, of New York, is among the incorporators. The use of pneumatic tubes is the distinguishing feature.

According to the State Mineralogist of California, the gold under the soil of that State has hardly been touched, notwithstanding the 40 years of mining which has been under way, and which has produced \$1,200,000,000 of the metal.

The capitalists who were driven out of the Union Ferry Company by the Hollins syndicate are planning, it is said, to bid for the franchises of the ferries controlled by the company when they are put up at auction by the city authorities in November.

The subject of coal waste is to be investigated by a Pennsylvania State commission. The waste arising from producing and marketing coal, also the utilization of all kinds of wastes, come within the scope of the inquiry.

The assessed valuation of real estate in Brooklyn this year, for purposes of taxation, is \$481,027,444, an increase of \$23,874,309 over last year.

The new site of the Grant Locomotive Works, in Chicago, is near the spot selected for the extensive car shops of the Northern Pacific Railroad, and practically a part of the same property.

The Gatling Ordnance Company have secured a site at Glenolden, eight miles from Philadelphia, on which to erect extensive works for the manufacture of high power cast steel guns, in competition with European firms. The plant prepared to turn out the first test gun will cost about \$125,000, but it is proposed to enlarge the manufactory to combine gun making with the manufacture of steel castings and capabilities for the testing of modern guns of large calibre. The company have been chartered in West Virginia with a capital stock of \$1,000,000, and power to increase to \$5,000,000 if necessary. When once started it is intended to make the factory one of the largest in the world.

The Manhattan Elevated Railway, according to report, will be soon extended to Yonkers, materially affecting property valuations above High Bridge. It is stated that the company have recently acquired a right of way from their present terminus, through the Croton estate, up to the line of the Croton Aqueduct, to cross which they must secure permission from the Public Works Department. Beyond that they have half a block of open street which leads them directly into the Kingsbridge road, which is regulated and macadamized all the way up to Sherman's Creek, where the Harlem improvement is being pressed. At that point ex-Street Cleaning Commissioner Coleman is building a bridge across the cut, under contract with the city, and thence on to the end of the island the road is open. This, it is said, is the route the elevated road will take.

The conflict of the cracker bakers East and West is impending. Western gentlemen, now in Boston to secure property on which to build, in competition with New York, represent that during the last two months all the best cracker manufacturers from Chicago to Denver and from Minneapolis to New Orleans had combined themselves into a stock company, with \$10,000,000 capital, called the American Biscuit Company. They were quickly followed by the United States

Baking Company—not a trust, but a lawful stock company, duly incorporated, with \$5,000,000 capital, and not a dollar in it but cracker bakers' money. The former have purchased 17 lots and a large building in New York City, and are building ovens as fast as they can be pushed, while the United States Baking Company have secured options on several large properties in Boston and will contest the field with characteristic Western pluck.

The Haytian Consul says the commerce of that country was never more flourishing than now.

A large area of Ohio oil territory has passed into the possession of the Standard Oil Company, in some parts of the State equal to entire counties, and at Chicago the company are building an enormous refinery, said to be the largest in the world, with a still capacity of 56,000 barrels, and when finished the plant will cost \$4,000,000.

The Swedish colony in the town of New Sweden, Maine, now numbers 1000, and its founder, W. W. Thomas, Jr., now Minister to Sweden, gives it as an historical fact that New Sweden is the only successful agricultural colony founded by foreigners from over the ocean within the limits of New England since the revolution. Twenty years ago the site of New Sweden was a dense forest.

The New York *Press*, which is largely, if not entirely, owned by Mr. Robert P. Porter, Superintendent of Census, and may be supposed to have authoritative information on the subject, says that the Census Office is now tabulating the population at the rate of 2,500,000 a day, and that the tabulation will be completed within a very few days after August 1. Counting machines expedite the work.

The census supervisors for Colorado have so far completed their work as to be able to announce that the population of the State will be very close to 400,000. The three largest cities in the State, outside of Denver, are as follows: Pueblo, 27,455; Leadville, 18,365; Colorado Springs, 11,200.

The commissioners will meet in a few days to decide upon the location of the proposed steel bridge across the St. Lawrence River, at Waddington.

Engineer Herschel, who gained much experience at Holyoke, Mass., and elsewhere in waterworks construction, is in charge of the work now in progress for the supply of Newark, N. J., and the company are acquiring the necessary rights.

The Illinois Central Railroad Company will expend \$1,000,000 on a general office building in Chicago.

The Widener-Elkins syndicate have made contracts for 70 miles of pipe to conduct natural gas from the Indiana fields to Chicago, and a pipe line to New York is declared to be feasible.

Bids have been invited for furnishing shafting and additional tools for improving the shipbuilding plant at the Brooklyn Navy Yard, and they will be opened August 12. The sum of \$125,000 is available for this purpose—\$50,000 for the construction plant and \$75,000 for the machinery plant.

The London Board of Trade has issued an official publication showing that the merchant vessels leaving for and arriving from foreign ports and British colonies last year numbered 124,972, and measured 71,889,895 tons, an increase over 1888 of 5240 vessels and 3,460,750 tons, of which about 38 per cent. is foreign.

Chief Engineer Birdsall, of the Department of Public Works, says that manu-

facturers will be surprised when they get their Croton water bills this month, because the increased pressure will cause the meters to work considerably faster.

The New York elevated roads are about to use brake shoes of gun metal to reduce the screeching.

Edison's latest invention, the heliograph, designed to convey signals through long distances, will be stationed on Mount Dunderberg, near Peekskill, and signals will be sent direct to New York, 40 miles intervening.

It is said that Johnstown has more inhabitants now than before the great flood.

MANUFACTURING.

IRON AND STEEL.

Last week the men employed in the blooming mill department of the Edgar Thomson Steel Works, of Carnegie Brothers & Co., Limited, at Braddock, Pa., appointed a committee to wait on Charles M. Schwab, general superintendent, requesting him to grant them the eight-hour system. Owing to the sliding scale signed nearly three years ago, Mr. Schwab was unable to grant the request. The scale referred to expires on January 1, 1891, when the men hope to have the eight-hour system restored to them.

Negotiations have been pending for some time looking to the transferring of the plants of the Columbia Iron and Steel Company and the Pennsylvania Construction Company, located at Uniontown, Pa. Favorable progress in the negotiations has been made, and it is believed the transfer will be made at an early date.

In addition to the contracts recently received by the S. R. Smythe & Laughlin Company, engineers and contractors, of Pittsburgh, mention of which was made in a recent issue of *The Iron Age*, they have received a large contract from the Youngstown Rolling Mill Company, of Youngstown, Ohio, and also an order from the Milwaukee works of the Illinois Steel Company for a 7 x 4 feet regenerative gas furnace for a 10-inch guide mill. This is the fourth order received by them from the Illinois Steel Company within two years.

On Friday, the 18th inst., Hal. K. Taylor purchased the property of the Himrod Furnace Company, at Youngstown, Ohio, for \$75,000, as trustee for the creditors. He will continue to lease the property until an opportunity presents itself to dispose of it at a satisfactory figure. S. Frank Eagle, the present lessee of the furnace, states he is undecided as to whether he will renew his lease when it expires.

The long abandoned charcoal furnace, once known as the Northern furnace, at Chocolay, near Marquette, Mich., is being rapidly reconstructed and will probably be ready for operating some time in September. The blowing engine has a new foundation, and three boilers, formerly at the top of the stack, have been removed to a new position on the ground. The lining of the stack has already been completed. The furnace has lain idle for 17 years and few members of the iron trade expected that it would again resume active operations. The owners expect to turn out about 60 tons of pig iron a day. They will enjoy much better transportation facilities than in the old days. The South Shore Railroad, built since then, runs within 100 yards of the furnace.

The Cincinnati Corrugating Company, of Piqua, Ohio, are adding a galvanizing department to their sheet mill.

The labor difficulties of the Penna. Bolt and Nut Company, Lebanon, Pa., have been settled, the company having engaged a large proportion of new men, a few of the old hands being re-employed. The works are again in full operation.

Work has commenced on the plant for the Trenton, N. J., Malleable Iron Company, which was recently incorporated.

The Etowah Iron Company, of Philadelphia, are preparing to develop 17,000 acres of manganese land in Bartow and Cherokee Counties, Ga. A site has been selected and washing mills for the ore erected.

A Mr. J. B. Hastings has made the town of Parkersburg, W. Va., a proposition to erect a wire nail factory under the following conditions: He will erect a building 80 x 100 feet and furnish it with all the necessary machinery, including 50 of his patent nail machines,

with the privilege of using all patents, for \$35,000 in money and \$10,000 in stock. He will assume control and manage the plant at whatever salary the directors may fix. The plant, as proposed, will have a capacity of 3,000 kegs per week. It is not unlikely that the proposition of Mr. Hastings will be accepted.

The Mary Pratt Furnace, at Birmingham, Ala., will shortly be offered for sale at public auction, complications in the transfer of certain interests in the plant making this step necessary.

The Linden Steel Company, of Pittsburgh, and the Hubbard Iron Company, of Hubbard, Ohio, have signed the Amalgamated scale.

The sheet mill of the Reading Iron Company, Reading, Pa., resumed operations on the 25th after three weeks' idleness. The company have voluntarily advanced the wages of padlers from \$3.80 to \$4 per ton, and a proportionate increase has also been made in all other departments. Some 200 men are affected.

Jones & Laughlins, Pittsburgh, contemplate the erection of a third furnace, and work on it will commence about September 1. About \$200,000 will be expended on the new plant.

The Allegheny Bessemer Steel Works, at Dequesne, Pa., will soon begin the erection of eight soaking pits, with a heating capacity of 32 ingots every 20 minutes. The new pits will be built on a more perfect plan than the eight pits now in use, and will be inclosed by a building 50 x 80 feet. The new cupola at these works has been put in blast, and a new hoist will be completed in a few days.

The Bristol Pioneer Steel Plant and Rolling Mill Company have been organized at Bristol, Tenn., to build two Bessemer and two basic steel furnaces.

Work has commenced on the plant of the American Arms Company, at Bessemer, Ala. This company formerly did business at Boston, Mass., but were recently sold and reorganized under the State laws of Alabama with a capital stock of \$200,000.

The four mills of the Catasauqua Manufacturing Company, of Catasauqua, Pa., have been closed since June 28 last, and the prospects for an early resumption of work are not very encouraging. Lodges of the Amalgamated Association of Iron and Steel Workers, have been organized among the employees with the result that the firm have been requested to sign the amalgamated scale of wages governing the Eastern mills. This the firm refuse to do and the men decline to return until the scale is signed. Oliver Williams, president of the Catasauqua Manufacturing Company has made the following statement regarding the trouble: "Our directors are unanimous in their decision that they will not sign the scale under any circumstances. We have had no trouble in treating with our men for the past 25 years and would have no difficulty in doing so now were it not for outside influences. We will not be dictated to by men who do not belong to our town. We have offered to pay the prices as given in the scale, but will not sign it. Our mill has worked more weeks in the past 20 years than any other in the country and our wages have always been satisfactory. Our payroll amounts to \$40,000 per month. We have not taken an order since May and are suffering no inconvenience by the present difficulty. The last trouble we had with the association was in 1880, and our mills were then idle for five months."

Stack No. 4, of the Glendon Iron Company, at Easton, Pa., will soon be torn down, not to be rebuilt.

At Pittsburgh on Saturday, June 26, Judge Magee handed down an opinion confirming the masters' report and dismissing the bill and cross bill in the case of the Cherry Valley Iron Company, of Leetonia, Ohio, and others, creditors of Graff, Bennett & Co., against J. W. Friend, J. M. Bailey and James Pickands, trustees for the syndicate that purchased the property of Graff, Bennett & Co. at the sale by the assignee. The costs were placed upon the plaintiffs.

The Homestead Steel Works, of Carnegie, Phipps & Co., Limited, at Homestead, Pa., are situated adjacent to the City Poor Farm, of Pittsburgh. The city authorities have decided to sell the property, which consists of 149 acres and remove the institution to some other locality. Bids for the property were requested and the above firm made an offer of \$2800 per acre, or \$417,945 for the entire property. A prominent real estate firm in Pittsburgh bid \$2900 per acre, or \$432,100 for the entire property. No action has as yet been taken on the bids.

The stock houses of the furnaces of the Crane Iron Company, at Catasauqua, Pa., are being extended so as to facilitate the unloading of

materials. The trestling upon which the cars are shifted extends quite a distance beyond, and are capable of holding many more cars, and by the new arrangements considerable work will be obviated.

Riter & Conley, of Pittsburgh, have received an order for three Bessemer steel converters, that are probably the largest ever built in this country. They are for the Edgar Thomson Steel Works, of Carnegie Bros. & Co., Limited, at Braddock, Pa., and are of 18 tons capacity each. They measure 12 feet in diameter and are built of steel 1½ inches thick.

The Beaver Lick Iron Company, recently incorporated in West Virginia, with headquarters at White Sulphur Springs, have purchased 18,000 acres of land in Greenbrier County, and have laid out a town to be called Dreury. Of the land purchased, 15,000 acres are iron ore land of the best quality found in West Virginia; 2000 acres are coal land of the same geological formation as the famous Mineral county land worked by the coal companies in that region. The capital stock is \$1,000,000, and the company are making every effort to get a furnace built and the coke and ore land developed.

The work of repairing the plant of the Wheeling Steel Works, at Wheeling, W. Va., is being pushed rapidly and it will probably resume next week. The steam capacity is being increased by the erection of new boilers.

Edwin Thomas, of Thomas, Ala., has purchased a two-tenths interest in the Lehigh Car, Wheel and Axle Works, of McKee, Fuller & Co., at Cataqua, Pa., the consideration being \$60,000. The firm now consists of James McKee, of Philadelphia; James W. Fuller, Wm. W. McKee, Frank B. Swartz, of Cataqua; Warren A. Wilbur, of South Bethlehem, and Edwin Thomas, of Thomas, Ala.

Machinery.

The Ajax Engine Company, of Erie, Pa., have more orders on hand now than ever before in their history. For the first six months of this year they sold 681 engines.

On July 25 a charter was granted to the Bradley-Barker Mfg. Company, of Pittsburgh, for manufacturing and dealing in gas regulators and gas and steam supplies. The directors are as follows: Jas. A. Bradley, of Bellevue; John E. Ridall, E. L. Maxwell, E. F. Houston and William Barker, Jr., of Pittsburgh.

The Centropolis Car and Machine Company, of Centropolis, a suburb of Kansas City, Mo., have assigned, with liabilities of \$100,000 and nominal assets of \$150,000.

The wire factory of the Oliver Iron and Steel Company, at Pittsburgh, destroyed by fire some months since, is being replaced by a building 140 x 243 feet, to cost \$65,000.

The boilermakers and blacksmiths in the employ of J. P. Witherow, of Pittsburgh, whose shops are located at New Castle, Pa., have been granted a reduction in working hours from ten to nine per day without any reduction in wages.

L. F. Seyfert's Sons have succeeded the old firm of L. F. Seyfert, at Third and Willow streets, Philadelphia, and will continue the business of dealing in engines, boilers, machinery and machine tools, at the same location, where they have admirable facilities for handling large trade, both in convenience of delivery and the size of stock always on hand. The members of the firm are W. H. Seyfert, J. M. Seyfert and H. H. Seyfert, L. H. Seyfert having withdrawn.

The Salem Foundry and Machine Shop, of Salem, Mass., builders of belt and hand-power elevators, report business as being uncommonly good for this time of year. Orders are coming in very rapidly.

The Cohoes Iron Foundry and Machine Company, of Cohoes, N. Y., manufacturers of elevators, gearing, shafting, machinery, &c., now have about all the business they can conveniently do, and are employing about 125 men. They will shortly issue a new catalogue describing their various productions.

The Rochester Iron Works, of Rochester, Minn., are placing on the market the Monarch rocking grate, on which it is claimed any kind or size of fuel can be burned to advantage, and the use of which will make a great saving in fuel and increase the capacity of the boiler for making steam. It gives the fire the most thorough cleaning, as it not only shakes, as do other grates, but it also gives a slight lifting motion similar to that given by the insertion of a slice bar, by which the fuel is lifted enough to permit the fine ashes to sift through and to drop into the ash-pit, and breaking up the caked coal enough to allow the air to penetrate the mass thoroughly and yet not disturb the fire too much. It is independent of the boiler setting, resting upon its own frame.

A strike of foundrymen is reported in the shop of Smith & Rorke, in Greenpoint, N. Y., because the firm refuse to sign an agreement with regard to a standard of wages.

Hardware.

The repairs in progress for some time at the plant of the Braddock Wire Company, at Rankin Station, Pa., were completed last week, and operations were resumed in all departments on July 28. It has been arranged between the men and the firm to start on the eight-hour or three-turn system, the first turn commencing at 2 a.m. This makes three mills in Pittsburgh that are now running on this plan.

The J. C. Walsh Gasoline Torch Mfg. Company, 48 West Adams street, Chicago, are finding a wide field for their torch among electricians. They are extending their trade to foreign countries. Regular shipments are made to Australia, while they have hopes that their English trade will in time rival their domestic business.

The Decker Mfg. Company, Keokuk, Iowa, successors to Ayres & Decker Mfg. Company, advise us that during the past eight months their business has shown very satisfactory returns and that the outlook is encouraging. They manufacture the Maud S. curry comb, Decker's hog rings and ringers, Hill's pattern rings and ringers, Challenge wire stretcher, Axtell curry comb, can openers and broom holders. They expect soon to issue a new catalogue and price-list, illustrating the goods made by them.

The Holenbeck Lock and Knob Company, whose works at Jordan, N. Y., were recently burned out, are removing their machinery and effects to Syracuse.

The Ithaca Gun Company, Ithaca, N. Y., are about completing a brick building 125 feet long by 36 feet wide as an addition to their works, which are being filled with the most improved machinery for the manufacture of their guns.

A great many contradictory reports have been published recently in regard to the removal of the Phoenix Horse Shoe Works from Poughkeepsie, N. Y., to Chicago or some other large Western city. The officers of the company have been very reticent regarding their movements, but it is authoritatively reported that labor troubles are at the bottom of the whole affair. The works are at present idle, but it is quite probable that operations will be resumed again in about two weeks.

F. E. Myers & Bro., Ashland, Ohio, are exceedingly busy, and the firm are receiving, on an average, some 30 telegrams a day, their telegraph bill for June being over \$100, while that for July will certainly be larger. Last week, through their Eastern salesman, S. T. McDowell, they received an order for one of their steel tracks and carrier for the barn of the Hon. William M. Evarts, and another for the farm of ex-President Pike, of the New Hampshire State Senate. Their shipments have, we are advised, averaged over \$1000 a day during the past month, and the volume of trade has been greater than ever before in the firm's history.

Miscellaneous.

Conrad N. Jordan, chairman of the reorganization committee of the Iron Car Company, of Huntingdon, Pa., addressed a meeting of the creditors of the Huntingdon Mfg. Company, in Huntingdon, on July 25, and stated that the two companies were to be organized into one to be called the Iron Car Equipment Company. This company, which is backed by leading bankers of New York, offered to pay the creditors of the Huntingdon Mfg. Company in full, by their notes from six to 24 months, with six per cent. interest. This proposition was unanimously adopted by the creditors, and the receivers will consequently be discharged.

The Reading (Pa.) Times of July 24, states that the extensive machinery which was put up near Barto, Berks county, by the Edison Concentrating Company for the purpose of testing the ore concentrator invented by Edison, has been idle for some weeks. The plant erected by the Edison Company cost over \$50,000, and is now being moved to another State. Several of the buildings have already been taken down. It is claimed that the quantity of ore in the rocks found at Barto which had to be quarried was insufficient to pay for working.

The Pittsburgh Mill, Mine and Electric Equipment Company, of Pittsburgh, have increased their capital stock from \$10,000 to \$100,000.

The H. C. Frick Coke Company, of Pittsburgh, are directing the attention of the trade to the fact that certain dealers have been sending out circular quotations purporting to be for "72-hour Connellsburg coke," and that an investigation has shown that these dealers are not getting any coke from the Connellsburg region, but are drawing their supplies from the Latrobe district, and works on the main line of

the Pennsylvania Railroad. These cokes are not equal in quality to Connellsburg coke; are not known by that name, and should not be sold as such. They can be detected by the freight charge, which is 17 cents per ton less than on Connellsburg coke.

The Pittsburgh Reduction Company, of Pittsburgh, manufacturers of aluminum for commercial purposes, are preparing plans for the erection of a large new plant. Several sites adjacent to Pittsburgh are now under consideration and a selection will doubtless be made in the near future. It is proposed to erect a plant with 10,000 horse-power, near the natural gas or soft coal fields. Since the company commenced work under their process, they have increased their capacity six fold, and at present they occupy an iron-clad building 75 x 175 feet, in that city. It is being operated night and day and the firm disposes of their product as fast as it is made.

The property of the West Fairmont and Marion Consolidated Coal and Coke Company, located in Marion County, near where the Fairmont coke is made, was sold under a foreclosure of bonds held by F. W. Floyd, of New York, president of the company and representative of the trustees. The property was bought by Capt. J. Ed. Watson, of Fairmont, for \$20,000. The plant comprises about 600 acres of Fairmont coal, and it is opened by a shaft.

Among recently authorized corporations in Illinois are the following: Farmers' Agricultural Implement Company, at Springfield; capital stock, \$25,000; incorporators, J. H. Vinarsdale, A. E. Brunson, John Lindsay and others. Columbia Steel Car Company, at Chicago, to manufacture and operate cars, machinery and railway appliances; capital stock, \$1,000,000; incorporators, Patrick D. McArdle, Freeman J. Sport and Arthur H. Walker. United States Electric Car Company, at Chicago, to manufacture electric cars and motors and operate same; capital stock, \$30,000; incorporators, M. S. Debolt, J. H. Donnelly, John A. Qualoy. Stirling Company, at Chicago, to manufacture steam boilers; capital stock, \$500,000; incorporators, John Gardine, Robert C. Alexander, Allan Stirling. Inter-Ocean Iron and Steel Works, at Chicago, to manufacture iron and steel under patented process; capital stock, \$120,000; incorporators, Stanley Waterloo, A. W. Barnum, F. R. Timby.

The Aerated Fuel Company's system has recently been placed in the works of the Keystone Watch Case Company, Nineteenth and Brown streets, Philadelphia, Pa., for melting brass, copper and other metals in crucibles, and also for annealing and other lines of work. In melting metals in crucibles, it is found that the melts can be obtained in considerably shorter time than with a coal fire, besides the other advantages attendant on oil fuel. W. S. Collins, licensee of this system for the eastern part of the Middle States, has recently removed his office from 171 Broadway to 814 Temple Court, New York.

The illustrated catalogue of the Cincinnati Corrugating Company, of Piqua, Ohio, describes very fully the many forms of corrugated iron and steel sheets made by them. One of the most valuable features to be found in the catalogue consists in the plain descriptions of the best methods of handling the plates. The book is thus made one of reference, from which practical information can be derived.

The Edison Industrial Works have been incorporated, with a capital stock of \$1,000,000, of which \$550,000 is preferred. The company will operate near Bloomfield, N. J.

Although the capacity of the Schenectady Locomotive Works, Schenectady, N. Y., has been increased from 350 to 600 locomotives per annum in the past two years, they are now compelled to refuse orders for engines to be finished within a year. Full night and day gangs are working on orders covering 12 months.

Coxe Bros. & Co., of Driftwood, Pa., will shortly begin the erection of a coal breaker capable of handling 3000 tons per day. The breaker, which will be one of the largest in the anthracite coal fields, will cost \$150,000.

A tract of 150 acres at Glenolden, on the Philadelphia, Wilmington and Baltimore Railroad, eight miles from Philadelphia, has been purchased as the site for the works of the Gatting Ordnance Company.

The Monitor Plow Works, at Minneapolis, were totally destroyed by fire on Monday. Loss, \$100,000.

A graving dock, large enough to receive any ship ever built, has just been opened in Sydney Harbor.

The Iron Age

New York, Thursday, July 31, 1890.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
 CHAS. KIRCHHOFF, JR. - EDITOR.
 GEO. W. COPE. - - - ASSOCIATE EDITOR, CHICAGO.
 RICHARD R. WILLIAMS - - - HARDWARE EDITOR.
 JOHN S. KING. - - - BUSINESS MANAGER.

The Cost of Bessemer Steel.

The preliminary report of Carroll D. Wright, Labor Commissioner, on the cost of production of pig iron, steel ingots, steel rails, coal, coke, iron ore and limestone, has just been issued. It is the document from which we compiled lately a series of tables on the cost of pig iron, putting them in a form better adapted to studying them. We now present some data extracted from the tables relating to the cost of producing Bessemer ingots and Bessemer steel rails.

We must, however, preface this presentation with the remark that the figures are interesting only as reflecting isolated and individual cases. Their value as the basis for generalizations is very small. They are likely to be particularly dangerous to those who have only a superficial knowledge of the industry.

One establishment running 244 days in 1889 on rail steel with two converters produced 116,080 gross tons, or 479 tons per day. It is very probable that it is a mill in Eastern Pennsylvania. The consumption of material per ton of product and its cost per ton was as follows:

Consumption, Cost material, pounds.		per ton.
Pig iron.....	2,200	\$16,062
Scrap.....	422	15,657
Ferro or Spiegel.....	73	39,079

The elements of cost in one gross ton, exclusive of interest, insurance, depreciation of value of plant, or freight on product, were as follows:

Cost of Steel Ingots		
Pig iron.....	.....	\$15,795
Scrap .....	.....	2,949
Manganiferous Material.....	.....	1,278
Total material.....	.....	\$20,022
Value of scrap.....	.....	.510
Net cost of material.....	.....	\$19,512
Labor.....	.....	1,522
Officials and clerks.....	.....	.108
Fuel.....	.....	.919
Supplies and repairs.....	.....	.453
Taxes.....	.....	.010
Total cost, ingots.....	.....	\$22,524

An interesting comparison is furnished by the reports of three foreign works, one on the continent, running 293 days in 1888, with two converters, and two in Great Britain, the first running 139 days in the first half of 1890, and the second 134 days from March 29 to September 29, 1888.

Cost of Steel Ingots.		
Continent.	Great Britain.	
Days run.....	293	139
Number converters.....	2	2
Total product.....	61,932	26,569
Product per day.....	211	191
Proportion of Materials used:		511
Pig iron.....	2,438	2,331
Scrap.....	2,628	141
Ferro.....	16	155
Spiegel.....	13	152

Cost of Material per ton:		
Pig iron.....	\$11,623	\$10,154
Scrap.....	10,950	8,167
Ferro.....	50,333	...
Spiegel.....	19,497	19,757

Cost per ton of Ingots:		
Pig iron.....	12,659	10,569
Scrap.....	0,688	0,565
Ferro.....	0,353	...
Spiegel.....	0,112	1,346
Total.....	\$20,757	\$13,812

Value of scrap:		
	0.087	0,206
Less net cost material.....	20,670	13,606
Labor.....	0,679	0,649
Officials and Clerks	0,153	0,185
Fuel.....	1,194	0,238
Supplies and Repairs	1,120	0,541
Taxes.....	*	0,019
Total.....	\$23,816	\$15,238

* Included in officials and clerks.

The most striking point in the comparison of these figures is the relatively small daily product of the foreign works, 211, 191, 170 tons respectively from two converters as compared with 479 tons for our own. Even that performance is small as compared with the work done by our most modern works. The Continental plant pays as much for raw material as our own and does not do as well on fuel, but its labor account is considerably lower. The English works have an enormous advantage in raw material, and have much cheaper labor.

It is interesting to follow these figures with those relating to the cost of making steel rails:

Cost of Steel Rails.

	United States.	Continental.	Great Britain.
Days run.....	258	148	137
Product, tons.....	113,460	48,193	32,926
" per day.....	440	326	240

Quantity and Cost of Material used:

Ingots or Blooms b.	120,762	i. 50,540	b. 39,687
Pounds per ton.....	2,384	2,349	2,700
Cost per ton.....	\$34,392	\$23,816	\$15,644

Cost per ton—Rails:

Material.....	\$25,963	\$24,976	\$18,856
Less Value Scrap.....	0,840	1,554	2,461
Net Cost Material.....	25,114	33,422	16,395
Labor.....	1,382	2,010	1,368
Officials and Clerks..	*	0,231	0,025
Fuel.....	0,417	0,679	0,449
Supplies and Repairs	0,774	0,688	0,003
Taxes.....	*		
Total.....	27,087	27,025	18,588

* Not reported.

It is evident that the American and the Continental establishment are the same as those given in the statements of cost of steel ingots, while the British establishment is No. 1 of the preceding table. It must be noted that the American and the English works start with blooms, while the Continental puts in the ingot. The English works evidently shear very liberally, as the heavy allowance for scrap shows. In fact, the figures show the extraordinary result that the value of the scrap is greater than the entire cost of rolling from the bloom to the rail. Still, with the exception of repairs, the cost, exclusive of raw material is nearly the same in the American and in the English works. It would be very dangerous, however, to regard the foreign figures as typical. The small daily capacity stamps the works as old-fashioned, even in Europe, where modern plants do very much better. The great advantage, it will be observed,

lies in the cheap raw material. Some figures bearing on the latter are presented below, being the report of three English furnaces producing Bessemer pig.

Cost of English Bessemer Pig.

Time.	1	2	Nov. 1,
Days running.....	182	182	363
Total product, gross tons.....	31,714	34,093	62,929

Cost of Materials, per ton:	3	1	2	Nov. 1,
Ore.....	\$3,313	\$3,565	\$3,384	
Cinder, scrap.....	4,002	3,544	...	
Limestone.....	0,526	0,494	0,723	
Coke.....	2,328	1,825	2,689	
Coal.....	...	...	2,432	

Cost per ton:	3	1	2	Nov. 1,
Ore.....	\$6,138	\$6,063	\$6,387	
Cinder, scrap.....	0,149	0,560	...	
Limestone.....	0,171	0,206	0,264	
Coke.....	2,772	2,479	2,555	
Coal.....	0,030	

Total.....	\$10,290	\$10,729	\$10,244
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A glance at the table published in *The Iron Age*, page 94, will show that the cost of collecting the raw materials is very much higher, and that the labor account is nearly double with American plants. Mr. Wright presents also some data showing the cost of making steel ingots to be used in the manufacture of nails, the first being for the first half of 1889, the second for 1888, the third and fourth for 1889. It is possible that Nos. 2 and 3 cover the same plant for two successive years:

Cost of Soft Nail Steel Ingots.

No. 1.	No. 2.	No. 3.	No. 4.
First half			
1889.	1888.	1889.	1889.
Days running..	127	263	261
Total product..	28,343	61,895	68,790
Daily product..	223	233	276

Proportion of Materials, pounds per ton:	1	2	3	4
Pig iron.....	2,385	2,230	2,393	2,261
Scrap.....	51	37	..	24
Ferro.....	30	22	25	20

Cost of Material:	1	2	3	4
Pig.....	\$16,282	\$17,316	\$17,000	\$17,539
Scrap.....	16,428	17,445	...	16,188
Ferro.....	51,875	51,462	56,400	56,299

Cost per Ton:	1	2	3	4
Pig iron.....	\$17,335	17,241	18,161	17,701
Scrap.....	0,375	0,287	...	0,173
Ferro.....	0,469	0,513	0,627	0,496

Total Material..	\$18,179	\$18,041	\$18,788	\$18,370
Less Value Scrap..	0,088	0,132	0,018	0,080

Net Material...	\$18,091	\$17,909	\$18,770	\$18,290
Labor.....	1,923	1,800	1,716	1,573
Officials and Clerks.....	0,116	0,080	0,051	0,075
Fuel.....	0,383	0,600	0,535	0,474
Supplies and Repairs.....	1,050	0,672	0,616	0,594
Taxes.....	0,012	0,004	0,006	0,008

Total.....	\$21,575	\$21,074	\$21,604	\$20,939
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A comparison of these figures with those of the rail mill quoted above is somewhat surprising, the cost at the latter being higher in spite of cheaper raw material, of which, however, the consumption is larger. The fuel account is also relatively high. The contrast in itself proves how dangerous it would be to generalize from insufficient data.

Decadence of Farming, Its Causes and Consequences.

The decay of agricultural interests, not merely in the New England States but in the Middle and some of the fairest of the Western States—the very garner of wheat and corn—is one of the phenomena which the census of 1890 is making more conspicuous. We are already familiar with the thrice-told tale respecting the deserted farms on the Atlantic seaboard, the first to suffer from migration westward. The fine old brands of "Genesee county flour" raised in New York State are still well remembered even by middle-aged citizens. In Connecticut, too, and in Massachusetts and all through the East, there was an abundance of grain, wool and other remunerative products of agricultural industry. But all this has changed within a decade, the most enterprising tillers of the soil having "gone West" to more congenial fields. It is with surprise, however, that the average reader learns from the latest census returns that isothermal lines indicating the limits of profitable agriculture are still receding, and that even from the very paradise of the farming region, according to the generally accepted idea, there comes a cry that the appraisement of land values—for example, in Ohio, Indiana and Illinois—shows a remarkable decrease since 1880.

Ohio, Indiana and Illinois farmers find to their dismay that even when the crop measured in bushels equals that of former years, there is a deficiency in the net market value measured in cash. Extending our field of observation to Pennsylvania, we read that the county of Berks, one of the richest and most fertile of the State, has gained only 12,891 in population during the last decade, while the city of Reading, within the same boundaries, has gained 15,842, warranting the conclusion that the farming population of that county has decreased nearly 3000.

These examples are among the many striking evidences that might be cited in support of the indisputable fact that the farming industry of the Eastern and Middle States, and even far westward into the valley of the Ohio, is no longer yielding to the plowman the rich rewards of former years. Doubtless it is true that the soil in some degree is becoming impoverished, that some of the valuable chemical and organic constituents essential to a prolific yield have been abstracted by continuous culture; but, beyond this, inquiring economists look for a satisfactory explanation. The Pittsburgh *Despatch* assumes to discover the secret in an inimical railroad policy, the editor remarking: "There is no doubt that the loss of farming population in Berks county is due to the economic influences that tend to concentrate population in the large cities, and especially to the railroad policy which brings the prairies of Illinois and Iowa as near to the seashore as the farms of Pennsylvania. When the farmer of the West can ship his products at an actually less cost than that which is imposed upon the Pennsylvania farmer, the

superior cheapness of his land enables him to drive his Eastern competitor out of the farming business and into the adjacent city industries. The work of such influences must become so evident that it will soon force itself upon the attention of legislators. In the meantime the desertion of Pennsylvania farms is likely to go on."

Another view is that of the Chicago *Tribune*, which finds an argument in favor of opening foreign markets. Referring to the most favored sections of Ohio the writer says: "The Wayne county farmer, who stands as the representative of tens of thousands in the Northwest, raises more wheat and corn than he can find a market for. After he has supplied the needs of the United States he sends a part of the remainder abroad, but a certain quantity stays undisposed of on his hands. Unable to get rid of that, he is pinched; if able to sell it, he prospers." The simple obvious fact is that owing to extraordinary crops in the old world as well as in the Western hemisphere the cereal production during the favored year 1889 far exceeded the demands for consumption. In the case of the United States the situation was aggravated by the schemes of speculators, who raised artificial barriers to the export movement, repeating the folly of former years. The same concurrence of circumstances tending to like results is among improbable events. At the same time there exist cogent reasons for diversifying industries. Especially is it well to encourage the fullest development of the mechanical industries, lest those which are purely agricultural shall acquire undue proportion. And this conclusion carries with it the inevitable corollary that the policy of the Government, as of individual traders, should be the extension of foreign markets by all appropriate means.

Bankruptcy in the Argentine Republic.

Simultaneously with the conflict between Salvador and Guatemala, precipitated by an invasion of territory, but originating in the ambition of Guatemala to dominate the proposed Central American confederation there come reports of a violent popular uprising in Buenos Ayres. The source of discontent is the financial policy of the Government, which has involved the entire country in an oppressive burden of debt. The nature of this crisis is well defined by the London *Economist* of July 19, which says:

The outstanding cedulas of the Provincial Mortgage Bank must reach over \$310,000,000. Their growth has been startlingly rapid. Even as recently as December, 1885, the total was under \$50,000,000, and in December, 1887, only amounted to \$121,662,000. But in December, 1888, their amount was swelled to \$178,621,000, in 1889 to \$261,321,000, and now they exceed \$310,000,000; or, upon their face value, £62,000,000. That a people numbering 4,000,000 to 5,000,000 should in two and a half years have borrowed upon this form of land mortgage alone no less than \$190,000,000 is but an illustration of the utterly reckless manner in which they have gone to work. The chairman of this Mortgage Bank states that in July, 1888, they held applications for new mortgages to the extent of \$300,000,000, and it was natural

that the value of real estate should increase by leaps and bounds. Now, however, real estate is in a state of collapse, and the expedients proposed are many and apparently are almost equally futile. The security is not enough, and the best and most effectual way to deal with these securities is to write down their face value to a practicable amount. It is evident that Buenos Ayres is not through the crisis yet, and that fresh loans are only staving off the day of reckoning for a short time. It is far better to face the worst. There is property of much value in the River Plate republics, and probably a writing down of these cedulas in relation to their existing market values will in the end have to be resorted to. At all events they, as well as the inflated note currency, will have to be dealt with in some drastic fashion before the present difficulty can be surmounted.

From present indications the entire financial system of the Republic is thoroughly shaken, although London has not been as much disturbed as was thought probable at first.

Preventing Soft Coal Smoke.

The suppression of the Chicago smoke nuisance has at last been undertaken with commendable vigor. The attempts heretofore made have been spasmodic and only half-hearted, but now an earnestness is manifested which bids fair to accomplish good results. The city authorities no longer receive excuses from offenders that they have tried innumerable smoke preventers and have not yet found a perfect device. Nor do they fine an offender and suspend his fine on the easily given promise that he will do his best to abate the nuisance. The Smoke inspector has evidently adopted as his motto, "The way to prevent smoke is to prevent it," and this he is doing as rapidly as possible. Last week a large number of prominent business houses were fined and at the same time were warned that a continuance of the offense would not be overlooked. The consequence is that nearly all of them have adopted measures to prevent their chimneys from discharging great clouds of smoke. They were not gently admonished or mildly persuaded to use their best endeavors to cure their smoky chimneys, but were given to understand very plainly that the nuisance they were maintaining would no longer be tolerated. Under such a pressure it has not been found difficult to secure a remedy.

The tug boats on the Chicago river, which meanders through the heart of the city, and the switch engines on the railroads, which penetrate almost every portion of the municipal limits, have long been flagrant offenders, contributing much to the dense pall overhanging Chicago most of the time. Their owners are not to be permitted to continue their work of fouling the atmosphere. Suits have already been brought against most of them. If the smoke inspector works a reform in this respect his name should be recorded among the benefactors of the human race. Such a reform won in Chicago, will, of course, extend itself to other cities now suffering from the same nuisance. In a number of instances owners of tugboats have been served with three summonses in order to be certain of con-

viction under one of them. The railroads have also had strong cases made out against them, running in some instances up to 20 offenses. This work is in keeping with what has been done in other directions. Up to the close of last week evidence had been secured against 450 firms for violations of the smoke ordinance, and suits are being entered as rapidly as the cases can be handled.

It may seem to be a hardship to compel manufacturing firms, business houses and owners of large office buildings to forego advantages which they could have in the way of cheap fuel, simply because the smoke and soot are annoying to their neighbors. But if there is any benefit whatever to be derived in a commercial way from locating in a city, the owners of an establishment certainly receive advantages which outweigh the enhancement in cost of the fuel used by the adoption of measures to prevent smoke, whether they turn to smokeless coal or to a better paid and more skillful fireman. This is a live question in many other Western cities than Chicago, and the same vigorous measures should be instituted in all of them.

The Supply of Old Rails.

It is extraordinary how slowly the iron rails in the track of our roads are coming up. It is a remark very frequently made in trade circles that the supply is rapidly approaching exhaustion, and manufacturers, depending upon old iron rails as a raw material, are known in some cases to be contemplating the erection of steel plants. It is true that in considering this step they are not only taking account of the supply of raw material, but also of the growing competition of manufacturers of soft steel in certain specialties. The heaviest consumers of old rails are the manufacturers of track material, of spikes, angle bars and bolts. In angle bars that competition has been severely felt during the past few months, notably in the East. Steel makers have learned to use the right kind of stock, so that the question of quality is settled. This movement is likely to offset, to some extent, at least, the steadily growing demand for track material, with its accompanying increase in the demand for old stock. But the supply of the latter is not by any means likely to fail as quickly as many are inclined to believe.

The following table from the summary of Poor's Manual, just issued, throws much light on this subject. It gives the number of miles of steel rails and iron rails in the United States, and the percentage of steel of the total for a series of years:

Steel and Iron Rails in the United States.

Year.	Miles steel rails.	Miles iron rails.	Total miles.	Per cent. steel of total.
1880.....	33,680	81,967	115,647	29.1
1881.....	49,063	81,473	130,536	37.5
1882.....	66,691	74,209	140,960	47.3
1883.....	78,491	70,692	149,183	52.7
1884.....	90,243	66,254	156,497	57.6
1885.....	98,102	62,495	160,597	61.0
1886.....	105,724	62,384	168,048	62.9
1887.....	125,450	59,588	185,047	67.7
1888.....	138,516	52,981	191,497	73.3
1889.....	151,733	51,064	202,797	74.8

At the close of the year 1889 not less than one-fourth of the trackage in the United States was laid with iron rails. By far the greater part of it, of course, is in sidings. According to Poor's estimates the 160,544 miles of railroad of the country had besides 42,242 miles of sidings, second track, &c. Poor distributes the mileage as follows:

Iron and Steel Track—Miles.

Groups.	Iron.		Steel.	
	1889.	1888.	1889.	1888.
New England.....	2,799	3,089	7,570	7,222
Middle Group.....	7,312	7,804	25,518	23,978
Central North- ern.....	14,190	17,391	46,186	43,311
South Atlantic Gulf and Mis- sissippi.....	4,372	4,721	18,637	11,504
Southwestern.....	2,823	2,752	9,890	9,760
Northwestern.....	10,041	12,306	25,061	21,567
Pacific.....	6,250	5,529	16,536	15,215
	3,278	4,058	6,724	5,950
Totals.....	51,063	52,981	151,723	138,516

The Northwestern group, which includes Iowa, Minnesota, Nebraska, the Dakotas, Wyoming and Montana, actually shows an increase in the iron track. The others all exhibit the falling off to be expected.

These figures pretty thoroughly establish the fact that there is still an enormous reserve of old iron in the tracks. In the past it has come out in a fitful manner, thousands of miles being taken up in one year against hundreds at only a few years later. If, as is likely, the greater part of the iron rails are in sidings, it cannot be expected that they will appear in the market with a rush. Their service is unimportant and does not readily attract the attention of the operating department. In limited quantities old iron rails will be offered for sale for a good many years to come.

OBITUARY.

HENRY J. DAVISON, SR.

Henry J. Davison, Sr., a well-known engineer and a prominent citizen of this city, died suddenly July 22 at Liverpool. Mr. Davison was 55 years old. Having a natural taste for engineering, he went as an apprentice into the Chelsea Iron Works, at Hudson and Twenty-sixth streets. That concern manufactured light-draft steamers and gas plants. When he was 20 his employers failed. All their patterns and plans were bought by the Novelty Iron Works, at Fifty-ninth street. That company took the young apprentice as its foreman. Mr. Davison entered into the building of iron structures for the South American States. For the last 15 years he devoted himself entirely to gas enterprises and the construction of gas plants.

GEN. SILAS SEYMOUR.

Gen. Silas Seymour, who died on the 15th inst., was born at Stillwater, Saratoga County, June 20, 1817. He commenced his engineering experiences on the Erie Railroad, designed the famous portage bridge over the Genesee River, and was finally appointed chief engineer of the road. Afterward he formed the company that constructed the Ohio and Mississippi, Louisville and Nashville and other roads in the Southwest. In 1855 he was elected State Engineer and Surveyor of New York

State, and was re-elected in 1881. At the breaking out of the war he assisted in raising the Excelsior Brigade. In 1862 the Government appointed General Seymour chief engineer of the Washington Aqueduct, and he remained in charge until its completion. In 1864 he was appointed consulting engineer of the Union Pacific Railroad, designing the famous bridge over Dale Creek. In 1872 he was appointed chief engineer of the North Shore Railroad of Canada, between Quebec and Montreal. On his return to this country, in 1878, he was successively president of the Massachusetts Central Railroad and consulting engineer of the West Shore Railroad. At the time of his death he was the consulting engineer of the Cape Cod Ship Canal and interested in railroads in Florida. Three sons and two daughters, all married, survive him.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., July 30, 1890.

The tariff discussion is now fairly started, and will be continued largely on one side until something else happens, which will either be the application of the proposed "cloture" or the assent of the minority to a vote after a full debate of the bill and Senate amendments. The Senators of the majority, after several caucuses, have concluded to confine their tactics at present alone to the Tariff bill. They will, therefore, watch the discussion, taking but little part in the speaking. As soon as the course of the minority indicates a talking against time for dilatory purposes they will apply the new rule limiting debate. In order to expedite business the majority have fixed the hours of the sessions of the Senate from 11 a.m. to 6 p.m., five hours of which is for the tariff talkers.

The speech of Senator Carlisle is looked for with some interest, as it will be his maiden effort in the Senate. The minority expect to consume about four weeks on the tariff. If they were sagacious they would have their say briefly, so as to state their position, and then permit a vote to be taken, say, before the end of August. The desire of many of the Republican Senators to get away would make short work of the Election bill, either by postponement or tabling. If the hot weather is permitted to pass, it will then matter but little whether they go or stay, the majority then being in favor of staying.

The Naval authorities and the experts of the Steel Inspection Board are considerably exercised over the allegation from Pittsburgh that defective steel, stamped with a counterfeit of the Government Inspector's die, had been shipped from the Linden Steel Works, at that city, to the Naval Ordnance Foundry at Washington. Captain Sicard, of the Inspection Board, says that it would be impossible for extensive frauds to be practiced on the Government. In the case of boiler plates, each is tested; in the case of ship plates and shapes the product of each heat is tested.

In explaining the practice of the work, Captain Sicard says: "There are many checks against mistakes, oversight or fraud, accidental or intentional. After the inspection at the mills each plate and shape is subjected to another inspection at the yard where they are used. Having passed at the mills, any defective plates are thrown out at the yard. This makes a double supervision. And, besides, every plate is under supervision, from the raw materials to the completed output."

"Mistakes may occur," said the captain, "in the astortion of plates. When a bad plate which has been rejected gets in with good ones in the hurry of getting them out

of the way of those which follow it is invariably found out."

The officers are not inclined to think that the company were party to the attempted fraud which this might have been by the alleged use of a stamp without the inspector's private mark. They say that the works are too widely known to engage in that sort of thing, and, besides, are making money on their contract.

The Steel Inspection Board here were cognizant of the suspicion of something being wrong, and reported the fact to the Secretary; but not desiring to bring the works into discredit without a full investigation, in order to place the responsibility, if a fraud, have kept the matter quiet. The inspector has been quietly investigating for over a month. The fact of his desk having been broken open gives credence to the suspicion of premeditated fraud on the part of some one. This aroused his suspicions and led to the detection of the defective plates. They were found to be much out of the way. The point, however, has not been established that the presence of the defective plates was anything more than a mistake in assorting and shipping the plates. It is said at the Department that the company, who are doing good work, should not be regarded as delinquent in their duty, unless the allegations are established beyond a question.

The United States and Brazil Steamship Company's new steamship, the *Segurancia*, is the finest of the fleet yet turned out. Her total displacement is 5895 tons and her capacity is 3890 tons. She is made entirely of steel and was built by the Delaware River Iron Shipbuilding and Engine Works, at Chester, Pa. The vessel is 336 feet long and 45 feet wide. Her total depth 36 feet. She is provided with triple expansion engines of from 2800 to 3000 horse-power, supplied with six multi-tubular boilers, after a Scotch pattern. The rate of speed is estimated to be 17 knots per hour. Her propeller is made of manganese bronze. The vessel is also provided with Main's hot blast system and circulation generators, also with Allen's dense air refrigerating rooms, of capacity sufficient to contain the provisions for an entire voyage. By this cold air process the rooms can be made to sink to a temperature of nearly 50° below zero, and besides 5 tons of ice can be manufactured daily.

The reconstructed Western Union building, recently burned out, will be nine stories high, all that part above the fifth floor to be renewed. Brick, iron and bluestone will be used in preference to granite. The adjoining structure on Dey street will be raised to correspond with the main building, and the peaked mansard roof and tower will disappear. The battery power will be in the cellar, where the dynamos are located. The expenditure will be about \$300,000, including cost of new equipments.

The gigantic scheme of federal irrigation of arid lands in the West has excited a wide interest. There has been something attractive in the idea of building great dams and creating vast reservoirs in the mountain fastnesses, from which water might be drawn to enrich millions of acres in the valleys below. At the same time grave objections are encountered. It is proposed, by the scheme now before Congress, to reserve 800,000,000 acres of land, to be under the control of the United States. Much of this land is already fertile and capable of cultivation, but it is to be reserved because, somewhere within its limits, there are supposed to be about 100,000,000 acres of arid land. In Washington alone, according to a statement

made last week by Senator Allen, of that State, about two-fifths of the entire area of that new State is to be withdrawn by the United States and reserved under its control on the plea that it can be improved by irrigation. In others of the recently created States the proportion of the proposed reservation is still larger.

The Value of Self-Fluxing Ores.

BY S. A. RICHARDS, CHICAGO, ILL.

It has been claimed that an ore low in iron cannot be carried any distance and compete with ores high in iron. To a certain extent this is true, and especially so if there is not much difference in the cost of fuel, but the composition of the gangue must surely be taken into account when estimating the value of an ore. The price advances according to the units of metallic iron in the ore, and if very high in iron the cost often far exceeds its relative value with ores containing less iron. In the following article the writer proposes to show his reasons for making this statement. All theores to which reference will be made are from the Lake Superior district.

In the calculations phosphorus will not be taken into consideration. The intention is simply to show the difference in the value of ores according to their gangue in producing an iron suitable for mill, open-hearth basic or foundry purposes. In the case of low phosphorus ores the purchaser often pays a fancy price for an ore that meets his requirements, hence the ores will be dealt with according to the cost of producing iron, assuming the phosphorus in no case to be excessive. The following analyses are of ores the most of which are well known and extensively used, and, being either in or nearly within the Bessemer limit, bring a good price in the market. Not wishing to name the ores, they will be designated by numbers:

	Iron (metallic).	Manganese.	Silica.	Alumina.	Lime.	Magnesia.
1.....	60.37	0.54	7.10	2.95	0.25	0.19
2.....	61.10	0.96	7.80	0.43	0.36	0.14
3.....	60.17	0.92	7.85	2.46	0.25	0.11
4.....	58.00	0.41	14.17	1.43	0.34	0.29
5.....	58.10	0.39	14.10	1.00	0.45	0.07
6.....	61.00	0.11	9.00	1.10	0.75	1.00
7.....	56.80	0.04	9.95	2.26	0.45	0.37
8.....	54.40	0.27	17.06	0.11	1.50	0.99
9.....	54.20	0.75	2.80	0.95	7.05	3.61

Calculations based on the composition of the gangue in the foregoing ores, deducting moisture in each case, show that the quantity of material required to produce a gross ton of pig iron will be as follows:

	Ore, pounds.	Lime, pounds.	Coke, pounds.
1.....	3,930	1,180	2,320
2.....	3,870	1,190	2,290
3.....	3,930	1,220	2,330
4.....	4,070	2,030	2,640
5.....	4,070	2,000	2,640
6.....	3,890	1,350	2,340
7.....	4,150	1,650	2,570
8.....	4,300	2,900	3,000
9.....	4,190	.....	2,290

The price this season of the ore numbered 9 has been \$1.90 at the mines, or 34 cents per unit for the contents of metallic iron, which is much below the price at which most of the other ores have been sold. The unit of iron is a common way of estimating the value of one ore as compared with another, but taking into consideration the results shown above, as to the material required to make a ton of pig iron, and calculating values on the basis

of the present market value of No. 9, the cost of ore per ton should be about as follows at the points named, of course adding freights to destination:

	Chicago.	Mahoning and Shenango valleys.
1.....	\$3.85	\$4.75
2.....	3.90	4.80
3.....	3.85	4.75
4.....	3.80	4.70
5.....	3.80	4.70
6.....	3.90	4.80
7.....	3.75	4.65
8.....	3.65	4.55
9.....	3.65	4.55

Figuring the cost of coke at Chicago at \$5 per ton and in the valleys at \$3, while the limestone is assumed to be 70 cents at all points, the cost of material per ton of pig iron would be as follows:

	Chicago.	The valleys.
1.....	\$12.96	\$12.22
2.....	12.88	12.23
3.....	12.98	12.25
4.....	14.20	13.21
5.....	14.30	13.21
6.....	13.75	12.35
7.....	13.94	13.05
8.....	15.53	14.66
9.....	12.32	11.81

From these calculations it will be seen that, notwithstanding the comparative leanness of No. 9, pig iron will be made from it at lower cost than from the much richer ores. Nos. 4, 5 and 8, being high in silica, are the dearest ores in the series selected for illustration.

In cases where very rich ore is used a leaner ore with more silica is generally worked with it in order to produce the proper flux. Now, when the rich and lean ores are mixed together with the proper amount of lime to flux them, the whole simply forms a self-fluxing mixture. The question then arises—Will this mixture, at the price paid for it, make as cheap an iron as an ore lower in iron but self-fluxing, when the prices at which they can be bought are taken into consideration? As a general rule it will not, for usually the self-fluxing ores and those nearest approaching this condition are high in phosphorus, and their market price is lower per unit of iron than those carrying less phosphorus. It has been pretty well demonstrated that the phosphorus occurs in the gangue and not in the iron oxide. This being the case, it would be only natural to suppose that a gangue composed largely of lime would carry more phosphorus than silica (i. e., phosphate of lime). For instance, No. 8, which shows very high silica, contains on an average only 0.04 per cent. of phosphorus, while No. 9, which is very low in silica, but high in lime, carries on an average 0.50 per cent. of phosphorus. For Bessemer purposes the self-fluxing ores can rarely be used. For open-hearth basic, mill and foundry irons, as above shown, they are much more economical. The time is not far distant when the open-hearth basic furnace will supersede the puddling furnace, and mild steel will almost entirely take the place of wrought iron. The question will then arise—Which are the most profitable ores to use when the phosphorus in the pig iron cuts but little figure?

The iron steam collier *Saturn*, for the Boston Towboat Company, just completed by the Harlan & Hollingsworth Company, is 275 feet between perpendicularly, 40 feet beam and 26 feet deep. Her motive power will be a triple expansion surface condensing engine, supplied with steam by four Scotch steel boilers, and she will have two masts and be schooner-rigged.

TRADE REPORT.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 50 Dearborn street,
CHICAGO. July 30, 1890.

There is a continued heavy demand for finished material. Railway supply houses and other establishments in related lines are handling the largest tonnage in their history. Manufacturers are still behind in making deliveries. The situation in crude material is not so strong, but at the same time is fairly satisfactory.

Pig Iron.—It is hard to resist the impression that the market will be well sustained the remainder of the year. Although a huge business has been done and the assertion is frequently made that consumers have pretty thoroughly covered their requirements, yet every day brings up something fresh, and often from wholly unexpected quarters. Nothing serious is now apprehended from the occasional cutting of Southern Coke prices. It transpires that some recent low sales were unauthorized and have been repudiated by the Southern companies represented here, so that the weak sellers are decidedly few in number. The local Coke manufacturers state that they are adhering to the advance made last week and booking orders on that basis. The surprising announcement is made that shipments of Lake Superior Ore this season will fall below those of last year, owing to the blockaded condition of the lower lake docks. The price of Northern Pig Iron will be favorably affected if this proves to be the case. On the other hand concessions are being made on Coke by the Connellsburg shippers, amounting, it is reported, to 40¢ $\frac{1}{2}$ ton, and this will counterbalance the stiffness of Ore. The Charcoal furnaces are in good shape, being well sold up and having a very steady demand from the smaller consumers. Prices have been advanced by some makers at least \$1 $\frac{1}{2}$ ton. Ohio Softeners are moving well and some brands are dearer.

Quotations are as follows, cash, f.o.b. Chicago:

Lake Superior Charcoal	\$19.50 @ \$20.00
Local Coke Foundry, No. 1	16.50 @ 17.50
Local Coke Foundry, No. 2	16.00 @ 17.00
Local Coke Foundry, No. 3	15.50 @ 16.00
Bay View Scotch	18.00 @
Am. Scoton (Strong Soft), No. 1	19.25 @ 20.25
Jackson County, Soft and Silvery, No. 1	18.25 @ 18.50
Southern Coke, No. 1	16.50 @
Southern Coke, No. 2	16.00 @
Southern Coke, No. 3	15.50 @
Southern, No. 1, Soft	16.00 @
Southern, No. 2, Soft	15.00 @
Southern Gray Forge	15.00 @
Southern Mottled	14.00 @
Tennessee Charcoal, No. 1	19.00 @
Missouri Charcoal, No. 1	18.50 @
Alabama Car Wheel	23.50 @ 24.00

Bar Iron.—Renewed inquiry from car builders is having its effect on the Bar Iron trade. They have in some cases asked options on deliveries in May, June and July next year, but so far as known were not successful. Car specifications are quoted at 1.80¢, flat nominally, but it is very hard to find a mill in position to make the delivery desired. Inquiries are now seeking mills which have long been neglected by car builders. The large agricultural orders were placed the past week at much higher prices than those paid last season, and very close to current quotations. The upward tendency of Bar Iron hastened buyers to a decision. Ordinary specifications are now quoted at 1.85¢, half extras, with but few mills in a position to take orders for prompt shipment. Jobbers ask 2¢ @ 2.20¢ from store, but will probably advance their rates this week.

Structural Iron.—Structural Iron is in heavy demand. The stock of Beams here has not been so light for years as now. The mills are far back in their deliveries and the situation grows worse in that respect instead of better. The following quotations prevail on carload lots, f.o.b.: Angles, 2.30¢; Tees, 2.80¢ @ 2.90¢; Beams, 3.20¢; Universal Plates, 2.45¢ @ 2.55¢; Sheared Plates, Iron, 2.50¢ @ 2.60¢; Steel, 2.60¢ @ 2.70¢; Car Truck Channels, 2.60¢. Beams sell from store in small lots at 3.70¢, but Angles and Tees at 10¢ @ 15¢ $\frac{1}{2}$ per 100 above carload prices.

Plates, Tubes, &c.—A heavy business is in progress, both in mill lots and from store. Large orders are in sight in connection with new manufacturing enterprises. The mills are very firm and prices here are steadily maintained. Tubes are somewhat hard to get, but Plates are now being delivered with reasonable promptness. Nos. 10 to 14 Iron Sheets, 2.80¢ @ 2.90¢; do., Steel, 3¢ @ 3.10¢; Tank Iron, 2.65¢ @ 2.75¢; Steel, 2.85¢ @ 2.95¢; Shell Steel, 3.25¢; Flange Steel, 3.50¢; Fire Box Steel, 4.50¢; Rivets, 4¢ @ 4.25¢; Norway Rivets, 40%, off; Tubes, one three-quarter and less, 40% off; two to four and a half, 50% off; larger, 52½% off.

Black and Galvanized Sheets.—The market shows no change, except an advance in small lots. Mill agents report former dull and latter active. Small lots of No. 27 Common sell at 3.40¢, and Juniata Galvanized 62½% off.

Merchant Steel.—The market is reported quiet by some houses and active by others. Special qualities seem most in demand. Tire Steel, 2.40¢ @ 2.50¢ rates; Open Hearth Spring and Machinery, 2.50¢ @ 2.75¢; Bessemer Machinery, 2.30¢ @ 2.40¢; Crucible Spring, 3.50¢; Tool Steel, 7¢ and upward; Crucible Sheets, 7¢, 8¢ and 10¢.

Railway Supplies.—Rails are in fair demand, with sales at \$34 @ \$35.50, according to delivery. Splice Bars are moving in sympathy with Rails at 2.05¢ @ 2.10¢ for Iron and 2.25¢ for Steel. Spikes are active and dearer, with quotations at \$2.10 @ \$2.20. Track Bolts are hard to get and advancing in price. Leading makers will not quote for delivery before middle of September. Nominal rate of Hexagon Nuts 3.10¢ @ 3.20¢.

Old Iron Rails.—Old Rails have sold at \$26.75, but it is claimed that this is above the market, which rules at about \$26 @ \$26.50, with sales of moderate quantities. Old Steel Rails are fairly active at \$19.50 @ \$22, according to length. In Car Wheels there has been more trading lately, and they are now quoted at \$19.50 @ \$20, although one transaction is reported at \$19.25.

Serap.—High grade is in fair demand, but cheap stock is very dull. Dealers are quite stiff, as the supply offering is not excessive. Mixed Country Scrap is now worth \$15 @ \$16. We quote per net ton, dealers' selling prices: No. 1 Railroad, \$21; Forge, \$20; Mill, \$16; Machinery Cast, \$18; Borings, \$9; Pipes and Flues, \$14.50; Light Iron, \$11; Stove Plate, \$10.50; Wrought Turnings, \$18; Axle Turnings, \$18.50; Horse Shoes, \$19.50; Car Axles, \$25.50; Mixed Steel, \$14.25; Coil Steel, \$18; Leaf Steel, \$19; Tire Steel, \$20.

Pig Lead.—Decided weakness has developed since our last report. With free offers values declined from 4.45¢ to 4¢. Bearish rumors are current and the outlook is uncertain.

F. G. Holton, long and favorably known to the Northwestern Iron trade through his connection with the sales department of the Calumet Iron and Steel Company, has entered the commission business, hav-

ing secured several excellent agencies for Hardware specialties, Machinery, Steel, Finished Iron, &c. His office is room 517, Rookery Building, Chicago.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa. July 29, 1890.

Pig Iron.—The market maintains a firm front, but there is no great increase of activity as yet. There is a good deal of inquiry around, and consumers show a disposition to place orders, but they are not willing to pay the prices that are usually demanded for good brands. In most cases the figures are higher than were quoted a month ago, which interferes with a good many trades. In the meantime, holders appear to be strengthening their position, as the day to day demand enables them to get rid of their product at current quotations, so that, in the absence of accumulations, they can afford to wait further developments. The general position, therefore, is one of quiet confidence. There is no difficulty in placing orders within the limits named in our quotations, but no concessions can be had and in most cases deliveries are not to exceed 60 or 90 days. A careful study of the movements in the trade during the past four or five weeks will lead to the opinion that Mill Irons are 25¢ @ 50¢ $\frac{1}{2}$ ton dearer, that Foundry Irons are steadier and firmer, and that there are no low priced lots laid around (as there were some weeks ago) to interfere with the ordinary workings of the market. Under these circumstances Gray Forge is firmly held at from \$15.25 @ \$15.75 delivered; No. 2 Foundry at \$16.75 @ \$17, and No. 1 at \$18 @ \$18.50, price according to brand, quality, date for delivery, &c.

Bessemer Pig.—No movement whatever. The position is becoming somewhat strained, although there is no actual change from the conditions ruling for many weeks past. That is to say, there is no material accumulation of stocks; there is no decrease in consumption, neither is there any increase in production, yet there is no disposition to buy, even at the reduced figures which makers would be willing to accept. One reason for this is said to be because some furnaces have to take deliveries of ores, which can only be realized upon in the shape of Pig metal, while in other instances ores are said to have been resold at lower prices, thus enabling makers to name correspondingly low prices for the product. Nominal quotations are \$19 @ \$19.50, at furnace, but as already stated there is no business being done.

Splegeleisen.—Prices are entirely nominal at \$31 @ \$31.50, duty paid, for 20%. There is some inquiry, and at about \$30 @ \$30.50 buyers intimate that they might be induced to take a few thousand tons, but there is no immediate prospect of business, as neither side is inclined to make concessions.

Steel Rails.—There is absolutely no change in this department. Prices are steady and mills are fully employed, but orders are all of a limited character, in the aggregate equal to the output, but there is no increase of work on hand, and nothing to break the monotony which has so long overshadowed the market. Still the feeling is cheerful, and it would be a difficult matter to obtain any material concession from \$31.50 @ \$32 at mill, which are the usual quoted rates.

Steel Billets.—The market is quiet, but prices are steady at the rates quoted a week ago. Mills have all the orders they can handle for the present, and for the same reason consumers will not be in the market to any extent for the next three or four weeks. The recent sales and continued

offerings of German Billets tends to check any tendency toward an advance; but there are no indications of weakness; the market is simply waiting. Domestic 4 x 4 Billets can be had at from \$33 @ \$33.50 delivered, German at \$23 @ \$23.50 in bond, which is estimated to cost a trifle less than the Domestic article, especially for the smaller sizes.

Muck Bars.—The market is singularly inactive, considering the numerous inquiries and evident desire to place orders. Holders quote \$29 @ \$29.50 at mill, in some cases \$29.50 @ \$30, delivered; but only small lots are taken at these figures, which however are firmly maintained.

P. S.—Sales to-day at \$30, delivered, with indications that buyers will take large lots at that or better figures.

Bar Iron.—The demand is very satisfactory, and mills are nearly all running to their fullest capacity. As mentioned last week, however, this is not altogether due to a specially heavy demand, but more because of an accumulation of orders during the holidays, and because of the continued suspension of work at several large local concerns. The outlook is encouraging, nevertheless, and a heavy demand is confidently anticipated during the remainder of the year. Prices are steady at from 1.80¢ @ 1.85¢ for best Refined Iron, with very few that are willing to make concessions, no matter how desirable the order may be.

Skelp Iron.—There is a better demand, and manufacturers are now quoting 1.80¢, delivered, as a firm quotation for Grooved Skelp, with sales of several hundred tons at that price to-day. Sheared Skelp is held at 2¢ @ 2.1¢, delivered.

Plates.—There is a very active demand for Plates, and prices are firm with an advancing tendency. Mills are full of orders, and as there are indications of a continued heavy consumption during the fall months, manufacturers are considering their chances for higher prices. In some cases an advance is insisted upon, and in any event it is difficult to place orders at anything below the quoted rates, which are about as follows for lots delivered in consumers' yards:

	Iron.	Steel.
Ship Plates.....	2.20 @ 2.25¢	2.30 @ 2.40¢
Tank.....	2.20 @ 2.25¢	2.35 @ 2.45¢
Bridge Plate.....	2.25 @ 2.30¢	2.40 @ 2.60¢
Shell.....	2.40 @ 2.50¢	2.60 @ 2.70¢
Flange.....	3.00 @ 3.10¢	2.80 @ 3.00¢
Fire-Box.....	3.75¢	3.75 @ 4.25¢

Structural Material.—There is a heavy demand, and mills are crowded with work, and prospects for continued activity are regarded as very favorable. Prices are firm, and although they are nominally unchanged, it is difficult to place orders at the figures recently ruling. The usual rates are about as follows: 2.25¢ @ 2.30¢, delivered, for Sheared Plates; 2.20¢ @ 2.25¢ for Angles, with 15¢ @ 25¢ more for the same in Steel; Tees, 2.6¢ @ 2.7¢; Beams and Channels, 3.1¢ for either Iron or Steel.

Sheet Iron.—The demand is fully maintained, and mills are crowded with orders. Prices are therefore fully maintained, and for carload lots of best makes may be quoted as follows:

Best Refined, Nos. 14 to 20.....	3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24.....	3.20¢ @ 3.30¢
Best Refined, Nos. 25 to 26.....	3.40¢ @ 3.50¢
Best Refined, No. 27.....	3.50¢ @ 3.60¢
Best Refined, No. 28.....	3.60¢ @ 3.70¢

Common, 1/4¢ less than the above.

Best Soft Steel, Nos. 14 to 20.....	3 1/4¢ @ 3 1/4¢
Best Soft Steel, Nos. 21 to 24.....	3 3/4¢ @ 3 3/4¢
Best Soft Steel, Nos. 25 to 26.....	3 3/4¢ @ 3 3/4¢
Best Soft Steel, No. 27.....	4¢ @ 4¢

Best Bloom Sheets, 1-10¢ extra over the above prices.

Best Bloom, Galvanized, discount .60 @ 62 1/2¢

Common, discount 62 1/2¢ @ 67 1/2¢

Old Rails.—There is no business of any account, as there are very few Rails for sale at anything near what buyers would

be willing to pay, which are about \$25, at seaboard, or \$25.50 @ \$26 in the interior.

Scrap Iron.—There is a good demand for all descriptions at about the following prices: No. 1 Wrought, \$21.50 @ \$22 Philadelphia, or for deliveries at mills in the interior, \$22 @ \$28; \$16 @ \$17 for best Machinery Scrap, \$15 @ \$15.50 for ordinary, \$15.50 @ \$16.50 for Wrought Turnings, \$11 @ \$11.50 for Cast Borings, \$26 @ \$28 for Old Fish Plates, and \$17 @ \$18 for Old Car Wheels.

Wrought Iron Pipe.—There is little that can be said in this department. Relatively speaking business is unusually heavy, and as the mills are not keeping up to the demand, the prospect for a prolonged activity is decidedly bright. A meeting of the Pipe Association was held in this city on July 23, reaffirming former discounts, which are as follows: Butt-Welded Black, 47 1/2%; Butt-Welded Galvanized, 40%; Lap-Welded Galvanized, 47 1/2%; Lap-Welded Black, 60%; Boiler Tubes, 1 1/2 inches and smaller, 45%; Boiler Tubes, 2 to 4 inches, 50%; Boiler Tubes, 4 1/2 inches and larger, 52 1/2%; Oil Well Casing, 50%.

The Carbon Iron Company, of Pittsburgh, have appointed J. F. Bailey & Co., of Philadelphia, sole agents for the sale of their finished products at all points east of the Alleghanies to the Atlantic seaboard.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fourth and Main Sts.,
CINCINNATI, July 30, 1890.

Pig Iron.—The local market has continued quiet during the past week and the prominent features have changed but little. There has been a steady flow of carload orders, largely for No. 1 and No. 2 Soft and No. 3 Foundry grades for immediate shipment; but there have been a few large transactions on account of pipe works, ranging from 1000 to 4000 tons for delivery during the winter. Sales of 500 to 1000 ton lots have been made to Northern consumers, and many and frequent inquiries from foundries, mills, stove works and manufacturers of agricultural implements have betrayed the deep interest, if not the anxiety, of large consumers in the course of the markets, generally speaking. Confidence is entertained by both buyers and sellers, and while there is no tendency toward a depreciation of prices, the indications are that the easy feeling recently conspicuous has been replaced by a firmer tone. Car Wheel Irons have not been active, but have been held very firmly, Lake Superior, as well as Southern makes. Charcoal Irons have shared to a greater extent in the orders booked. Urgent inquiries for Southern Silvery and Silver Gray Irons have developed a scarcity of such grades. No. 2 Southern Coke Iron, too, is wanted beyond the ability of the furnace to supply at the moment; No. 1 Southern Foundry Iron is also in light supply, but there is little demand just now. Orders for Gray Forge are light, but there is some request for Mottled. Little has been heard during the week of "Warrant Iron," and the market has been undisturbed by the speculative element. A number of Cincinnati plants have sought and found more favorable locations in the oil and natural gas sections of Ohio during the past few years, and a further immigration is contemplated, but all of these concerns are not too far removed from Cincinnati to retain some of the advantages of a large and well established commercial center. Cheaper fuel, lower taxes and less harrassing labor difficulties are cited

as the causes of this change of home of industrial and manufacturing plants. But while the consumption of Pig Iron by Cincinnati concerns is diminishing, the tonnage of Iron distributing by Cincinnati firms is rapidly increasing; and while Southern Iron is principally sold, Ohio Iron, too, to a considerable extent, is handled. Iron made from Lake Ores is finding wider distribution and larger utility, toward which end Cincinnati is contributing her full share. Prices may be quoted as follows:

Foundry.

Southern Coke, No. 1	\$15.25 @ \$15.75
Southern Coke, No. 2	14.75 @ 15.00
Southern Coke, No. 3	13.75 @ 14.00
Ohio Soft Stone Coal, No. 1	17.00 @ 17.50
Ohio Soft Stone Coal, No. 2	18.00 @ 18.50
Mahoning and Shenango Valley	17.50 @ 18.00
Hanging Rock Charcoal, No. 1	21.00 @ 22.00
Hanging Rock Charcoal, No. 2	19.00 @ 20.50
Tennessee and Alabama Charcoal, No. 1	18.00 @ 19.00
Tennessee and Alabama Charcoal, No. 2	18.50 @ 19.50
Forge	
Gray Forge	13.25 @ 13.50
Mottled Neutral Coke	12.75 @ 13.00
Car Wheel and Malleable Irons	
Southern Car Wheel	22.50 @ 23.25
Hanging Rock, Cold Blast	22.00 @ 22.50
Lake Superior Car Wheel and Malleable	21.00 @ 22.00

Cleveland.

CLEVELAND, July 28, 1890.

Iron Ore.—The market has resumed its firmness, a result that may be due to the fact that about 20,000 tons of non-Bessemer Ore have been sold during the past week at the same prices prevailing during the busy season: \$4.50, f.o.b. vessels Lake Erie ports. Shipments to date are still between 600,000 and 650,000 tons in advance of the record at a corresponding time last year. The following quotations are announced to-day:

No. 1 Specular and Magnetic Ores, Bessemer quality	\$6.50 @ \$7.25
No. 1 Specular and Magnetic Ores, Non-Bessemer quality	5.50 @ 6.25
Red Hematite Ores, Bessemer quality	5.25 @ 6.00
Red Hematite Ores, Non-Bessemer quality	4.25 @ 5.00

Pig Iron.—There is some demand for Lake Superior Charcoals and for Forge Irons, but the market as an entirety remains quiet. The feeling as to market values is stronger than for several weeks past, and producers are more confident than ever about the future. This revival of trade is looked for in the latter part of August, but the demand now springing up may bring it to hand two or three weeks earlier than usual. Many of the furnaces will resume operations this week.

Quotations are as follows:

Nos. 1 to 6 Lake Superior Charcoal	\$21.00 @ \$22.00
Nos. 1, 2 and 3 Bessemer	19.50 @ 19.80
No. 1 Strong Foundry	17.80 @ 18.30
No. 2 Strong Foundry	16.80 @ 17.30
No. 1 American Scotch	17.80 @ 18.30
No. 2 American Scotch	16.80 @ 17.30
No. 1 Soft Silvery	17.50 @ 18.50
Mahoning and Shenango Valley Neutral Mill Irons	15.80 @ 16.30
Mahoning and Shenango Valley Red Short Mills	16.30 @ 16.80

Scrap.—There has been some improvement in the amount of business done. No. 1 Railroad Wrought is still quoted at \$21 @ \$21.50 and is selling freely; Old Iron Car Axles have advanced to \$27 @ \$27.50; Wrought Turnings are quoted at \$15 @ \$15.50; Cast Scrap at \$18; Machinery Scrap at \$14.50 @ \$15.

Old Rails.—Old Americans are worth \$26.50 @ \$27, but are not selling with much freedom.

Manufactured Iron.—The demand for Common Bar is improving; 1.75¢ @ 1.80¢ is now being paid at the mills.

The Cleveland Rolling Mill Company have enlarged their facilities and perfected their machinery for rolling Steel Tire, both round and square edge, from special grade of steel, selected from solid ingots

made exclusively for this purpose. They refer to having added to their plant, among other things, one of the most modern of straightening machines.

Louisville.

LOUISVILLE, KY., July 28, 1890.

Pig Iron.—The market has been dull with few sales, and these purchases of iron in which desirable deliveries were offered or prices shaded, or sales to parties to fill orders previously taken which their own furnaces cannot at the present time complete. What sales have been effected were on a basis of \$10.50 for Gray Forge at furnace. The coming week will probably witness a livelier market and larger sales, as Pittsburgh is now more active and there has been a general inquiry during the last two days for fall delivery. This movement will probably be followed by buying in the West, though prices will not advance materially at the present moment. The chief feature of the sales will probably be extended deliveries, and parties are now in the market for shipments running through the first six months of next year, and sales are reported to have been made on this basis by the leading company South. Manufacturing establishments report a large amount of work on hand and anticipate a heavy fall trade. Business, which at this portion of the year is usually dull with them, has been more active than for years past, and this is a strong feature in the iron market, as it is felt that the consumptive demand when buying begins will cause large orders to be placed and will be able to consume the large output of iron. We quote as follows:

Southern Coke, No. 1 Foundry	\$14.75 @ \$15.25
Southern Coke, No. 2 Foundry	14.25 @ 14.75
Southern Coke, No. 3 Foundry	13.75 @ 14.25
Southern Coke, Gray Forge	13.25 @ 13.75
Southern Coke, Silver Gray	14.00 @ 15.00
Southern Coke, Car Wheel	22.50 @ 23.50
Southern Coke, Charcoal	17.50 @ 18.50

Detroit.

WILLIAM F. JARVIS & Co., under date of July 28, 1890, report as follows: That consumption of all grades of Iron continues large is not to be denied, but that this means an active market does not follow. The majority of consumers are well provided for the immediate present, but, on the other hand, nearly all furnace men have their order books well filled up and are not trying to push sales. The current orders are accepted at full figures, and a general feeling prevails that higher rather than lower prices will be obtained later on this year. With a dull business but firm market we repeat our quotations of last week:

Lake Superior Charcoal, all numbers	\$20.50 @ \$21.00
Lake Superior Coke, Bessemer	20.00 @ 21.00
Katahdin (Maine Charcoal)	24.00 @ 25.00
Lake Superior Coke Foundry, all ore	19.25 @ 20.75
Southern No. 1	17.00 @ 17.50
Southern Gray Forge	15.25 @ 15.50
Jackson County (Ohio) Silver	19.00 @ 19.50

Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts., CHATTANOOGA, July 28, 1890.

Pig Iron.—The price of Southern Irons has been well sustained for the past week, and there is an apparent tendency to increase in the inquiries from consumers, but so far prices have remained unchanged. Most of the furnaces that have been out of blast for repairs for the last few weeks will probably all go in again in the coming month, and such has been the character of the changes that there will be a considerable increase in the output. Of the furnaces under construction, four of them will go into blast within the next 40 days, with an output of probably about 500 tons per day. From the nature of the

inquiries that are being received we think that the consumption during the coming fall will be about equal to the output, and so far as the Southern furnaces are concerned much increase in the stocks on hand is not looked for. If prices should go up from \$1 to \$1.50 @ ton the Southern Iron market would be considered in a very healthy condition, and profits commensurate with capital would be realized. The tone of the market may be considered quite easy, although the furnaces generally decline to make contracts for large round lots for far-off delivery. At the present time strikes upon the railroads are causing a good deal of embarrassment in shipments, not only to Pig Iron dealers, but in all classes of freights. The number of furnaces now in contemplation, and some in course of construction, will largely increase the production of Pig Iron in the South within the next 12 months. There is something of an inclination on the part of the lines to slightly increase the freights to Northern points, and what the result will be time alone can tell, but the probability is that they will be increased from 25¢ to 50¢ @ ton within the next three months.

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth St., ST. LOUIS, July 28, 1890.

Pig Iron.—The market has not shown any special features of interest during the past week. A few small sales are reported, but the large buyers have either made their purchases or put the matter off indefinitely, as they are not in the market for any quantity whatever. Southern furnaces are well supplied with orders, so much so that they evince little or no interest in pushing the sale of the product at the present time. Notwithstanding the dullness, prices are firmly maintained, and an order for 1000 tons of Iron would strengthen rather than weaken the market in its present condition. Inquiries among consumers show a very busy state of affairs so far as they are concerned, and if the present condition of affairs continue it is only reasonable to expect a large and increasing demand for Iron in the course of the next three or four weeks, and a corresponding increase in prices. A peculiar feature of the market is the scarcity of No. 1 and No. 2 Foundry, which brands command full figures as quoted below. Taking the market as a whole it is impossible to predict what the outcome will be, but at the present writing, indications point to a large fall trade at full prices. The following prices are quoted for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry	\$16.00 @ \$16.25
Southern Coke, No. 2 Foundry	15.25 @ 15.50
Southern Coke, No. 3 Foundry	14.75 @ 15.00
Gray Forge	14.25 @ 14.50
Southern Charcoal, No. 1 Foundry	18.00 @ 18.50
Southern Charcoal, No. 2 Foundry	17.00 @ 17.50
Missouri Charcoal, No. 1 Foundry	17.00 @ 17.50
Missouri Charcoal, No. 2 Foundry	16.25 @ 16.75
Ohio Softeners	18.00 @ 19.00

Bar Iron.—Mills are almost entirely out of the market as they are unable to quote on delivery earlier than September, and consumers are opposed to placing their orders so far ahead. Prices are strong with an advancing tendency, and 1.90¢ delivered on cars St. Louis is bottom for carload lots. Lots from store are quoted at from 2¢ to 2.05¢.

Barb Wire.—The demand for Barb Wire is brisk considering the season. Prices are fairly well maintained, although occasionally a low price is made to meet that offered by a competitor, and with the advent of the fall demand higher prices are more than likely to prevail, as on the present basis of the prices

of raw material, it is doubtful if finished stock could be handled profitably at the figures now ruling. Carload lots of Painted are quoted at from 2.90¢ to 2.95¢; Galvanized, 3.50¢ @ 3.55¢.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, July 29, 1890.

Pig Iron.—Brokers and furnace agents nearly all report a considerably increased inquiry, and it is confidently expected that there will be a largely increased business within the next week or two. Indeed, the volume of business during the week under review shows an improvement on the one preceding. Statistics show beyond doubt that production has fallen off considerably this month. A number of furnaces have blown out for repairs, and with the advent of cooler weather, so that puddlers and others can work with any degree of comfort, there will no doubt be an increased consumption. The market is stronger, but prices remain unchanged as follows:

Neutral Gray Forge	\$15.25 @ \$15.50, cash.
All Ore Mill	16.00 @ 16.50,
White and Mottled	14.50 @ 14.75,
No. 1 Foundry	17.25 @ 17.50,
No. 2 Foundry	16.25 @ 16.50,
No. 3 Foundry	15.75 @ 16.00,
No. 2 Charcoal Foundry	21.50 @ 22.00,
Coal Blast Charcoal	26.00 @ 26.50,
Bessemer Iron	18.50 @ 19.00,

Bessemer Iron is now being offered freely at \$19, cash, and for immediate or nearby delivery can be bought for less. Sales have been reported for the past month or more at \$19.50 @ \$19.80, cash, when at the same time there were sellers at \$19 without being able to find buyers.

Muck Bar.—There is a fair business, and the market may fairly be reported steady at \$29 @ 29.50, cash, as to quality and delivery. Those mills making a specialty of Muck Bar to sell are pretty well employed and likely to be for some time to come.

Manganese.—Small sales of 80% foreign at \$74 @ \$75, Pittsburgh. It is rumored that the works of Carnegie, Phipps & Co. will be shut down for a time, the object of which, if correct, will be to stiffen the market here for foreign. Brokers almost without exception report business as having been very dull for some time past.

Manufactured Iron.—There is an increasing demand for all kinds of Merchant Iron as well as the leading specialties, and the mills are generally busy and likely to be so during the remainder of the present year. Mills making a specialty of Pipe Iron are very busy, and those not over sold are not disposed to book any more orders than they can help, as they look for better prices later on in the season. Bars, 1.80¢ @ 1.85¢; Plate and Tank, 2.15¢ @ 2.25¢; No. 24 Sheet, 2.85¢ @ 2.90¢; Skelp Iron, 1.80¢ @ 1.85¢ for Grooved, and 2.10¢ @ 2.15¢ for Sheared, all 60 days, 2% off for cash.

Structural Iron.—There is a good demand; mills here have about all they can do. The output has been curtailed by the excessively hot weather. Prices remain unchanged: Angles, 2.15¢ @ 2.20¢; Channels and Beams, 3.10¢; Tees, 2.75¢; Steel Sheared Bridge Plates, 2.65¢ @ 2.75¢; Universal Mill Plates, Iron, 2.50¢; Refined Bars, 1.90¢ @ 2¢.

Steel Plates.—There is nothing new to report in connection with this important branch of the Steel industry. A very fair business is reported. Prices remain unchanged. Fire Box, 4¢ @ 4¢; Shell, 3¢; Flange, 3.15¢ @ 3.20¢; Tank, 2.75¢.

Merchant Steel.—There is continued activity, and prices are steady as quoted. Tool Steel, as to quality and brand, 8¢ and upward; Crucible Spring Steel, 4¢;

Open Hearth Steel, base sizes, 2 $\frac{1}{4}$ ¢; Crucible Machinery, 4 $\frac{1}{4}$ ¢; Bessemer Machinery, 2.35¢ @ 2.40¢; Tire Steel, 2.50¢ @ 2.60¢.

Nails.—The Cut Nail trade is still reported quiet, a great many jobbers having anticipated their wants prior to the recent advance, and they are now in a position to hold off. Steel Nails in car lots are still quoted at \$1.90, 60 days, 2% off for cash, and Iron do., 10¢ @ 15¢ per keg less. The product of a factory east of here making Iron Nails is being disposed of chiefly in this market. There is a very good demand for Wire Nails, but prices remain about as last quoted, \$2.30 @ \$2.35, 60 days, 2% off for cash.

Wrought Iron Pipe.—The Pipe mills continue very busy and there is not much doubt but that this will continue to be the case until the close of the year. The regular monthly meeting of the association took place in Philadelphia last Thursday, but notwithstanding the mills are so busy there was no change made in prices, which are firm as quoted. The Pipe industry has, owing to the great requirements of oil and natural gas companies, assumed mammoth proportions of late years, and is now one of the most important branches of the Iron industry in this district. It may also be stated that the Pipe Association has been working better this year than ever before, which may be attributed largely to the fact that manufacturers have had all they could do; hence there was no occasion for contention, as is the case when they have to hustle around for orders. As it is they can sit in their offices and get all the orders they want, and more, too. Prices remain unchanged. Discounts on Black Butt Weld, 47½%; on Galvanized ditto, 40%; on Black Lap Welded, 60%; on Galvanized ditto, 47½%; Boiler Tubes—1½-inch and smaller, 45%; 2 to 4-inch, 50%; 4-inch and larger, 52½%; Casing, all sizes, 50%.

Billets and Slabs.—There does not appear to be much inquiry for Billets, and prices remain as last quoted: \$30.50 @ \$31, at makers' mill. It is well known that orders for round lots can be placed without difficulty at prices quoted, notwithstanding sales are still being reported as high as \$32 @ \$32.50. As noted in our last report, however, the mills both here and at Wheeling are still pretty well sold up.

Old Rails.—There has been very little doing here for some weeks past in Old Iron Rails, whether it is because of a scarcity or because of consumers being filled up, we are not prepared to state; possibly both have something to do with it. It is stated that one firm of consumers have bought in all, within the past couple of months, some 10,000 tons. We continue to quote at \$26.50 @ \$27, with a sale of 500 tons reported at \$27. Old Steel Rails also continue in scant supply, and may be quoted at \$21 for short and \$22 @ \$22.50 for long prices.

Wire Rods.—The situation remains unchanged. There is continued inquiry, and but very few offering. In the absence of sales we continue to quote at \$45.50 @ \$46, at makers' mills.

Steel Rails.—There have been but few sales reported here recently. Both of the mills are well sold up for the next month or two, but they continue to solicit orders for late fall and winter delivery. There is considerable inquiry for small lots for immediate or nearby delivery.

Old Material.—There is considerable inquiry for No. 1 Railroad Wrought Scrap, with a sale of 500 tons reported at \$21.50, net ton; also 200 tons Cast Scrap, at \$16.25 gross, and 100 tons Mixed Steel at \$19; Leaf Spring Steel quoted at \$23 @

\$24. No demand for Old Car Wheels. Sales of Steel Bloom Ends at \$21.25 @ \$21.50

Railway Track Supplies.—Spikes remain unchanged at 2.10¢ @ 2.15¢, on cars at works, 30 days, according to character of order; Splice Bars, 1.90¢ @ 2¢; Track Bolts, 2.85¢ with Square, and 3¢ with Hexagon Nuts.

Coke.—There is a good demand; prices unchanged, as follows: Blast Furnace Coke, f.o.b. at ovens, \$2.15; Foundry Coke, \$2.45; Crushed Coke, \$2.65 per ton of 2000 lb. Prices at other points are as follows:

	Foundry Coke.	Crushed Coke.
On Cars at Boston and points taking Boston freight rates.	\$6.45	\$6.65
On Cars at Baltimore.....	4.62	4.82
On Cars at Buffalo.....	4.70	4.90
On Cars at Cleveland.....	4.15	4.35
On Cars at Cincinnati.....	5.10	5.30
On Cars at Toledo.....	4.80	5.00
On Cars at Detroit.....	4.80	5.00
On Cars at East St. Louis.....	5.65	5.85
On Cars at St. Louis.....	5.80	6.00
On Cars at Chicago.....	5.20	5.40
On Cars at Milwaukee.....	5.30	5.50

Freight rates from the regions are as follows:

To Pittsburgh.....	\$0.70
To Mahoning and Shenango valleys.....	1.35
To Cleveland, Ohio.....	1.70
To Buffalo, N. Y.....	2.25
To Detroit, Mich.....	2.35
To Cincinnati, Ohio.....	2.65
To Louisville, Ky.....	3.20
To Chicago, Ill.....	2.75
To Milwaukee, Wis.....	2.85
To St. Louis, Mo.....	3.35
To East St. Louis.....	3.20
To Baltimore.....	2.17
To Boston.....	4.00

(By Telegraph.)

There is an increased movement in Pig Iron; a city furnace sold 2000 tons Gray Forge at \$15.65, equal to about \$15.50 at furnace, which may be regarded as ruling price for immediate or nearby delivery. Sales of 400 tons Old Iron Rails reported at \$27.25, and 500 tons All-Steel Rails at \$22. A broker reports having an inquiry for 6000 tons Steel Slabs. Outlook very promising for an active, healthy trade both in Iron and Steel during balance of this year. It is probable a delegation of Iron and Steel manufacturers will be sent on to Washington, D. C., to assist in having the Tariff bill put through Congress.

New York.

Office of *The Iron Age*, 66 and 68 Duane street, NEW YORK, July 30, 1890.

American Pig.—The market continues exceedingly quiet, so far as new business is concerned. The majority of the furnaces seem well supplied with orders, so that there is little pressure to sell. The larger Southern companies have for so long a time held prices so high above the market that their business in this section must have been exceedingly light. We quote No. 1 Northern Iron, \$17 @ \$18; No. 2, \$16 @ \$17; Gray Forge, \$15 @ \$15.25; and Southern Iron, No. 1, \$17 @ \$17.25; No. 1, Soft, \$16.50 @ \$16.75, and No. 2, \$16 @ \$16.25. Bessemer Pig is offered at \$19 @ \$19.25, delivered at tidewater.

Spiegeleisen and Ferromanganese.—The market continues lifeless, with Spiegeleisen nominally \$30 @ \$30.50 for 20% and Ferromanganese \$71.50 @ \$72.50. Importers insist that the situation abroad justifies better prices in the near future.

Billets.—There have been some sales of Foreign Billets, but thus far only in small lots, and chiefly of odd and small sizes, on

the basis of \$32.50 @ \$33. Foreign mills do not demand the extras for small sizes which our works ask, and it is through this cause that Foreign Billets have found a market.

Wire Rods.—The scarcity continues, and the outlook has been rendered more dubious still through the fact that one of the large German mills, the Phoenix, has been forced to stop, through a breakdown. Small lots of Foreign Rods have been sold, the market being \$45 @ \$46, buyer taking risk of duty.

Steel Rails.—Outside of a few 2000 and 3000-ton lots no business is reported by Eastern mills. It is regarded as a satisfactory feature that the Western mills are filling up quite well. At present prices in the West, with freights advanced to \$4 to Chicago, the Eastern mills, on competitive business, could probably not do much better than \$29. For the present, therefore, Western business is out of the question. We quote Steel Rails, at Eastern mill, \$31 @ \$31.50, the latter for lots under 1000 tons.

Plates.—The only transaction of any consequence was the closing of a contract for 600 tons of Tank Plates for tank cars, at private terms. The market is steady at 2.30¢ @ 2.40¢ for Tank, 2.55¢ @ 2.70¢ for Shell and 2.75¢ @ 3¢ for Flange Steel, delivered.

Old Rails.—The market has been quiet at \$24 @ \$24.50, nominally, for Old Rails.

Track Fastenings.—We continue to quote Spikes, \$2 @ \$2.10; Fish Plates, 1.75¢ @ 1.9¢, and Bolts and Nuts, 2.80¢ @ 3¢, delivered.

Ely & Williams, of 38 Park row, this city, Eastern sales agents of Brown & Co., Wayne Iron and Steel Works, Pittsburgh, Pa., have issued a price-list of the U. S. Crucible Steels, the U. S. Iron and the Wayne Iron manufactured by that concern, with tables of extras.

Metal Market.

Copper.—Lake Superior Ingots have been sold in moderate quantities from second hands at 17¢ for prompt delivery. That price, however, is considered an exceptional one. The mining companies quote 17½¢ @ 17½¢, for nearby, and as high as 18¢, for Wire Bars for future delivery. Rumors have been current of the transfer of the entire amount of Lake product controlled by the Seligmans, but the rumor lacks confirmation. There has also been a report of a sale of 1,000,000 pounds of Wire Bars by the C. A. H. Company at 18¢, for December delivery, but the accuracy of that report is also unverified. Transactions that can be traced out involve no considerable quantity of the Metal but the demand has shown more activity the past three days and there are indications of a quite extensive business under way, involving deliveries running three or four months ahead. The demand for material for electrical purposes continues very large and the consumption in other directions shows no falling off. One concern is said to have recently booked orders for 1,000,000 lb of Wire and another is reported to have secured a contract for Wire for 300 miles of road. Arizona Ingots have been sold at 15½¢ in fairly liberal quantities and is now quoted at 16¢. Common casting Copper has found outlet at 14½¢ @ 14½¢, and the latter price is now considered a close one.

Pig Tin.—Straits Tin has undergone only slight change during the past week, but the tendency has continued in the direction of lower prices and the market

till has a rather unsatisfactory appearance. Speculation is tame in both this and the foreign markets, and local purchases for consumption appear to be moderate, leaving some accumulation of supplies here. For 5-ton lots out of store the current prices are about 21¢, and smaller quantities are quoted at 21½¢ @ 21½¢. Net cash prices for 10-ton lots were 20.80¢ bid, 20.90¢ asked, spot; 20.80¢ @ 21¢, July; 20.75¢ @ 21¢, August; 20.80¢ @ 21¢, September, and 20.80¢ @ 21¢ October delivery. About 100 tons due to arrive this week were reported sold at or about 20½¢ late Tuesday.

Pig Lead.—Business has not improved, and the market continues rather weak, without, however, any radical change in prices to record or unusual pressure of supplies for sale noticeable. Single carload lots have been let go at 4.42½¢ @ 4.45¢, and a few transactions at 4.40¢ have also taken place. At the moment there seems to be free offering at 4.45¢. Consumers are manifesting very indifferent interest, and there is little, if any, demand from other quarters.

Selter.—Prices for Prime Western for prompt and near future delivery, remain at 5.45¢ @ 5.50¢, and the market is fairly firm. Buyers are taking no active quantities on single orders, but the aggregate business has been rather larger than that of the preceding week, and the demand is better, with some call for deliveries running the next three months.

Antimony.—Increased supplies have served to turn prices rather more in buyer's favor. The market is quiet at present. Sales have been made at 20½¢ for Hallett's, and 23½¢ for Cookson's.

Tin Plate.—The situation in the Plate market is unchanged. Spot business has continued rather slow and nothing out of the ordinary interest in futures is manifested by large buyers. Prices remain very firm, however, in the absence of any weakening in the foreign market. Quotations for large lines, on the spot, are as follows: Coke Tins—Penland grade, IC, 14 x 20, \$4.45; J. B. grade, do., \$4.55; Siemens Steel, \$4.75; Bessemer do., \$4.50. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$4.70; IX basis, \$5.70; Siemens Steel, IC basis, \$4.80; IX basis, \$5.80. IC Charcoals—Calland grade, ½ X, \$5.50; Melyn grade, \$5.70; for each additional X add \$1.50; Allaway grade, \$4.85 @ \$4.90; Grange grade, \$5.00 @ \$5.10; for each additional X add \$1. Charcoal Terces—Worcester, 14 x 20, \$4.80; 20 x 28, \$9.50; M. F., 14 x 20, \$7.10; do., 20 x 28, \$13.75; Dean, 14 x 20, \$4.50; do., 20 x 28, \$8.90 @ \$9; D. R. D. grade, 14 x 20, \$4.45; do., 20 x 28, \$8.85 @ \$8.90; Mansel, 14 x 20, \$4.50; do., 20 x 28, \$9; Alyn, 14 x 20, \$4.50; do., 20 x 28, \$9; Dyffryn, 14 x 20, \$4.60; do., 20 x 28, \$9.10; Wasters—S. T. P. grade, 14 x 20, \$4.20; do., 20 x 28, \$8.60; Abercane grade, 14 x 20, \$4.20; do., 20 x 28, \$8.55.

New York Metal Exchange.

The following sales are reported:

THURSDAY, July 24.

20 tons Tin, August..... 20.90¢

FRIDAY, July 25.

25 tons Tin, August..... 20.85¢

MONDAY, July 28.

10 tons Tin, September..... 20.85¢

10 tons Tin, October..... 21.00¢

TUESDAY, July 29.

25 tons Tin, August..... 20.90¢

WEDNESDAY, July 30.

40 tons Tin, September..... 20.90¢

20 tons Tin, August..... 20.85¢

100 tons Iron, August..... \$15.50

Coal Market.

Anthracite Coal during July was dull, almost beyond precedent, and in consequence of excessive supplies prices were irregular. The companies persist in quoting the latest circular, and assume to be ignorant of any wide departure; but the spring circulars best indicate the prices actually realized. A renewed activity is not looked for before September. Meetings of the local agents and of the Western Association were held on Tuesday. The former agreed that 3,250,000 tons of Anthracite would amply supply the market in August, against 3,625,000 tons during the same month last year. The Western committee continued prices as per circular: \$4.25 for Grate, and \$4.50 for Egg, Stove and Chestnut, per gross ton at Buffalo, and \$5 for Grate, and \$5.25 for Egg, Stove and Chestnut, per net ton at Chicago. The contract for supplying 32,250 tons of Coal for the Brooklyn Water Works engines was awarded to the Lehigh and Wilkes-Barre Coal Company, at \$4.15 per ton for Plymouth Red Ash and \$3.85 per ton for Wilkes-Barre.

The official export of Anthracite shipments for the week ending July 19, is as follows:

	July 19, 1890.	July 20, 1890.	Differ- ence.
Regions.	Tons.	Tons.	Tons.
Wyoming.....	430,187	440,370	Dec. 10,183
Lehigh.....	132,032	148,638	Dec. 16,606
Schuylkill.....	255,265	261,894	Dec. 6,629
Total.....	817,484	850,902	Dec. 33,418

Year to date. 17,397,545 17,441,479 Dec. 43,934

Coxe Bros. & Co., have completed surveys and will at once begin the erection of a new Coal breaker at Drifton, Pa., to be constructed wholly of Iron. It will have a capacity of 3000 tons per day, and when completed will be one of the largest in the Anthracite Coal fields. It will cost over \$150,000.

Bituminous Coal is quiet and in good supply. Cumberland reports for the week 75,000; Clearfield, 65,400.

Financial.

The new departure of the Secretary of the Treasury with reference to bond purchases—inviting daily offers in behalf of the sinking fund—had the effect of relieving the Treasury vaults, and, at the same time, imparting greater ease to the general market. The Secretary has been paying 121 for the 4 per cents and 103 for the 4½ per cents. He at once accepted all offers up to 124 for the former and up to 103½ for the latter. The total purchases of bonds since the beginning of the new fiscal year, July 1, have reached a value of about \$11,500,000, at a cost considerably exceeding \$12,000,000, and covering about a quarter of the purchases required for the sinking fund for the year. In like manner large sums will be disbursed within the next three months.

Importers are preparing for the changes introduced by the Customs Administrative bill to take effect August 1. The special feature is the establishment of a semi-judicial body known as the Board of General Appraisers, which will pass upon all questions of fact relating to the appraisement of goods. There will be no appeal from the decisions of this board, but all cases of law will be carried to the courts as now. In New York alone, last year, 2700 custom cases were brought before the United States Circuit, and it is expected that a still larger number will come before the Board of Appraisers. Secretary Windom particularly calls attention to the provisions of Section 19 of the new law, which defines the dutiable value of imported merchandise to consist of all costs

and charges that attach to the goods in condition packed ready for shipment to the United States.

Another interesting feature is the course of events in anticipation of the Silver law, to take effect August 13. Instead of the rush of the white metal from Europe to this side, which had been freely predicted, the shipments from New York have been unusually heavy, partly to supply England's requirements for India account. During the week shipments to London amount to about \$1,500,000, nearly all in silver bars. A London telegram says the rise in silver and the concurrent advance in Indian exchange have gradually raised the price of India Council bills from 1/4, the lowest level, to 1/7, making an annual addition to the India budget of £3,553,000. To the same influence the English Minister of Agriculture attributed the recent rise in the price of agricultural products. Bar silver in London rose from 49½d to 50d ⅔ ounce.

The Stock market was dull and weak. Sugar Trust was favorably influenced by the reported arrangements for a reorganization. Neither the purchase of bonds nor the shipments of specie had much effect. The Coal and Iron Company's report was decidedly favorable, and the expenses of colliery improvements, for the first time included, formed a commendable feature. On Monday lower prices for Americans in London, the market there being affected by news of the revolution in the Argentine Republic, unfavorably influenced the whole list. On Tuesday the general tone was firmer, most of the regular stocks being fractionally higher. In Sugar Trust there was a strong upward movement. Another factor in the market was the engagement of over \$1,500,000 gold, for export to Europe, by a number of houses. Bank clearances in 56 cities show an advance of 4.3%; outside of New York, 12%.

United States bonds advanced and are quoted as follows:

U. S. 4½%, 1891, registered.....	103½
U. S. 4½%, 1891, coupon.....	103½
U. S. 4%, 1897, registered.....	123½
U. S. 4%, 1897, coupon.....	123½
U. S. currency ds. 1895.....	113

The bank statement shows an increase in reserve of \$350,725, which brings the surplus reserve up to \$6,053,125. The bond purchases by the Government are not reflected in the statement. The items show a contraction in the loans of \$2,306,100, a decrease in the deposits of \$6,374,900, and a loss in cash of about \$1,000,000. In the market time money is quoted 4% for 60 days, 5% for four months and 5½% for six months on approved collateral. City banks are discounting very little. The best double name paper is quoted 5 @ 5½%.

Sterling exchange was advanced to \$4.85½ @ \$4.89½ on account of the scarcity of bills.

Imports.

Hardware, Machinery, &c.

Boker, Hermann & Co., Arms, cs., 40; Chains, cs., 34; do., cs., 8
Downing, R. F. & Co., Hdw., cs., 3
Electric Cutlery Company, Mdse., cs., 3
Folsom Arms Co., Arms, cs., 8
Feld, Alfred & Co., mdse., cs., 29; Arms, cs., 24
Godfrey, Chas. J., Arms, cs., 8
Graef Cutlery Company, Cutlery, cs., 3
Hart, F. B., Mach'y, pgs. and pgs., 4
Hartley & Graham, Arms, cs., 40
Hensall, Bruckmann & Co., Machine, parts, 8
Hermann, Schutte & Co., Hdw., cs., 14
Isaacs, Vought & Co., Mach'y, case, 1
Lau, J. H., & Co., Arms, cs., 8
McKinley, E. S., Mach'y, pgs., 7
Meacham Arms Co., Arms, cs., 17
MERCHANT'S DESPATCH COMPANY, Arms, cs., 34
Oastler, W. C., Machinery, pgs. and pkgs., 16
Pioneer Iron Works, Mach'y, case, 1
Rotterdam S. S. Company, Arms, cs., 35
Schoerling, Daly & Gales, Arms, cs., 25
Sumner, C. P. & Co., Mach'y, cs., 11
Werleman, H. Arms, cs., 21
Wiebusch & Hilger, Arms, cs., 15; Hdw., cs., 22
Witte, John G. & Bro., Cutlery, cs., 12

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, July 30, 1890.

Scotch Pig Iron warrants declined early in the week to 45/5, under the weight of free selling for bear account, but the market since recovered 6d. on renewed purchases by outside operators. Outside buying, latterly, has been quite heavy, and the principal holdings are controlled by persons having confidence in the situation, and who believe that the position of supplies justifies holding for a considerable rise. Hematite warrants advanced 53/8. The chief feature in this branch has been difficulty in securing cash warrants to meet contracts maturing. Cleveland warrants have undergone little change in price, but shipments of Iron from the district have slackened. Business in warrants was done to-day at 45/10 for Scotch, 43/1½ for Cleveland, and 53/3 for Hematite.

Prices for Merchant Bar Copper receded to £57. 5/ under the influence of freer offerings by outside holders early in the week that reversed the then upward tendency of the market. A large quantity of August prompts was sold on Friday at £57. 15/. There is not the same degree of confidence in the market at the present time that prevailed a week ago. This change is attributed to the fact that French speculators lack former persistency, and seem inclined to realize whenever opportunity offers.

Block Tin prices have weakened off to £94 under pressure of moderate quantities of cash parcels for sale. Speculators are holding aloof at present, but inquiries indicate that a more active interest in the market would be taken should prices further recede.

The Tin Plate situation is about the same as last reported. Orders from the United States are limited and chiefly for special sizes, but there is a quite good demand from other markets and shipments are of full average amount.

Some dealers report an improved business in Old Iron Rails for the States, but sales have been at comparatively low prices.

A crisis is considered imminent in the Scotch Steel industry owing to the announcement of a proposed reduction in smelters' wages of 10 %.

In the Steel department in England there is considerable irregularity as to prices. Barrow makers are quoting Ship Plates at £6. 10/, and offers of Rails have been made at 5/ under the figures generally held for a week ago. On the other hand their figures for Wire Rods have been advanced 5/, and Billets are quoted 2/6 higher also.

Scotch Pig Iron.—The market for makers' brands has remained quiet and prices show no important change.

No. 1 Coltness, f.o.o. Glasgow	.....	61/6
No. 1 Summerlee,	" "	60/6
No. 1 Gartsherrie,	" "	50/
No. 1 Langloan,	" "	61/6
No. 1 Carnbroe,	" "	49/
No. 1 Shotts,	" at Leith	51/6

No. 1 Dumbarton,	" Ardrossan	.....	59/6
No. 1 Dalmellington,	" " "	.....	52/6
No. 1 Eighton,	" " "	.....	47/
Steamer freights, Glasgow to New York, 2/6, nominal; Liverpool to New York, 10%.			

Cleveland Pig.—Prices are quite firmly held, but current business is moderate and the demand only fair. Makers quote 43/3 for No. 3 Middlesborough, f.o.b.

Bessemer Pig.—Makers' prices are higher, in sympathy with an advance on warrants, but business is moderate. West Coast brands, Nos. 1, 2 and 3, 53/6, f.o.b. shipping port.

Spirgeleisen.—Makers ask higher prices, being well sold up and favored with increased inquiries. English 20% is quoted at 100/, f.o.b. shipping port.

Steel Rails.—The demand has continued moderately active, but prices are still irregular. Heavy sections quoted at £5, and light sections £5. 15/ @ £6, f.o.b. at N. W. England shipping point.

Steel Blooms.—Makers quote at £4. 17/6 for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—There is a fairly active demand and prices show a hardening tendency. Bessemer 2½ x 2½ inches, £5, f.o.b. at N. W. England shipping point.

Steel Slabs.—The demand continues slow. Bessemer quoted at £4. 17/6, f.o.b. at N. W. England shipping point.

Old Iron Rails.—There is little demand at present and sellers' prices are unchanged. Tees quoted at £3. 2/6 @ £3. 5/, and Double Heads £3. 5/ @ £3. 7/6, f.o.b.

Scrap Iron.—Dealings are rather small and at former prices. Heavy Wrought quoted at £2. 15/ @ £2. 17/6, f.o.b.

Crop Ends.—The market quiet and unchanged. Bessemer quoted at £2. 17/6 @ £3, f.o.b.

Tin Plate.—Prices remain firm, and the demand is fairly active. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	.....	16/ @ 16/3
IC Bessemer Steel, Coke finish	.....	14/3 3 14/6
IC Siemens	.....	14/6 @ 14/9
IC Coke, B. V. grade	.....	14/ @ 14/3
Charcoal Terne, Dean grade	.....	14/ @ 14/3

Manufactured Iron.—Orders are light at the moment and prices show little variation. We quote, f.o.b. Liverpool:

Staff. Marked Bars	.....	2 s. d.	2 s. d.
" Common "	.....	2 0 0	2 0 0
Staff Blk Sheet, singles	.....	7 10 0	7 10 0
Welsh Bars (f.o.b. Wales)	.....	6 2 6	6 5 0

Tin.—Trading fairly large but prices irregular. Straits quoted at £94. 2/6, spot, and £94 for three months futures.

Copper.—The demand rather slow and prices barely steady. Merchant Bars quoted at £57. 5/, spot, and £57. 15/ three months futures. Best selected, £64.

Lead.—A quiet market with little movement of prices. Quoted at £12. 12/6 for Soft Spanish.

Spelter.—Business fair and prices steady. Quoted at £28. 5/ @ £28. 10/ for ordinary Silesian.

Use of Alloys in Metal Work.

The valuable paper recently read by Professor Roberts-Austen, C. B., before the Society of Arts deserves to be very carefully considered by our manufacturers of gold, silver, electro plate, bronze and other goods. The paper was published in full in No. 1960 of the journal of the society, which may be had from George Bell & Sons, York street, Covent Garden for 6d. The keynote of the paper, as the London *Ironmonger* explains, was the coloring of metal work, and its principal theme was the clever manner in which the Japanese impart a charming variety of colors and tints to bronzes and other metals by means of alloys and certain pickling solutions. They mix together copper, silver, gold, lead and iron, and by varying the proportions of the different ingredients produce effects which are at once artistic and permanent. One of their chief mixtures is called "shaku-do," of which the analysis is as under:

Copper	.....	94.50
Silver	.....	1.55
Gold	.....	3.73
Lead	.....	0.11
Iron and arsenic	.....	traces

Total 99.80

Another analysis of this mixture shows:

Copper	.....	95.77
Silver	.....	0.08
Gold	.....	4.16

Total 100.01

This mixture has been used by the Japanese for very large works, some of which, cast in the seventh century, are specially remarkable. Another important alloy is called "shibu-ichi," of which the following are said by Professor Roberts-Austen to be typical analyses:

Copper	.....	67.81
Silver	.....	32.07
Gold	.....	traces
Iron	.....	0.52

Total 99.90

Copper	.....	51.10
Silver	.....	48.93
Gold	.....	0.12

Total 100.15

The precious metals used in these mixtures vary considerably, but in the "shaku-do" the gold is made to yield a beautiful purple patina when treated with the pickling solutions, while the "shibu-ichi" possesses a very attractive silver gray tint of its own. As to the pickling solutions the following are made up respectively as given here and are used boiling:

	I.	II.	III.
Verdigris	438 grains	87 grains	230 grains
Sulphate of copper	292 "	437 "	540 "
Niter	.....	87 "	.....
Comm'n salt	.....	146 "	.....
Sulphur	.....	233 "	.....
Water	1 gall.	1 gall.	1 gall.
Vinegar	.....	5 fl. drams	.....

The action of these solutions is said to be remarkable, especially in bringing out the tints and colors of which the Japanese workers in metals are so fond. Professor Roberts-Austen, after enumerating some of these effects, asks, "Why cannot we in this country use the alloys named in order to produce similar results?" The question is quite pertinent and proper. We should be very pleased indeed if some of our gold and silversmiths, for instance, could see their way to following up, and possibly improving upon, the Japanese practice in these respects. Up to the present time only one English artist (Mr. Alfred Gilbert) has done anything of the kind, but the Americans and French have

taken hold of the idea, and are working it already with conspicuous success. In Paris Christofle, and in New York Tiffany, are producing beautiful pieces of work by using alloys, and the latter are even said to have discovered the secret of the celebrated Japanese "lobster red." What these firms can do we also ought to be able to perform, and as the abolition of the plate duties will be calculated to increase competition from without, it is absolutely necessary that our metal workers of all grades should bestir themselves in order to meet the threatened increase of rivalry from foreign and American houses.

Steel Rivets.*

BY H. C. TORRANCE.

At a former meeting of the association standard specifications were adopted for steel boiler plate, which will greatly bene-

the boiler. It is needless to dwell on the advantage of having a standard, but I mention the great one, viz., the insuring of uniform quality of material and workmanship.

But I think the association did not go far enough, for, when plates were under discussion, another important factor in the construction of a boiler was neglected—the rivet. If it be necessary to insure uniformity of the plates, it is surely necessary to secure uniformity of the rivets.

Hitherto there has been some prejudice against steel rivets, and, while this may have some foundation when iron plates are used, it is certainly baseless when steel plates are concerned. The United States Government has clearly demonstrated this. All the ships of the new navy have steel boilers, riveted with steel rivets, and an examination of the character of the material prescribed and the severity of the tests to which it is subjected,

character: For longitudinal seams, tensile strength, 58,000 to 67,000 pounds; elongation, 26 per cent. All other boiler rivets, tensile strength, 50,000 to 58,000 pounds; elongation not less than 30 per cent. in 8 inches.

They subject them to the most severe hammer tests, such as flattening them out cold to a thickness of one-half the diameter, and flattening them out hot to a thickness of one-third the diameter. In neither case must they show cracks or flaws.

The appendix to this paper shows the Government requirements and methods of test in detail. It also shows United States Inspector's report of one day's tests of material delivered. It also shows a list of the Government's shearing tests, crediting steel with 85 per cent. against the bare 60 per cent., which we know to be the average for first-class iron rivets.

In view of the fact that the Government is using many hundred tons of these rivets, shown by the records of the tests to be vastly superior to any iron rivet made, in all the essentials of a good rivet, it would seem that the association would further benefit the boiler maker, the purchaser of the boiler, and also the maker of the rivet, by adopting a standard steel rivet to be used in all steel boilers.

APPENDIX.

United States Government Requirements.—Boiler Rivets.

Kind of Material.—Steel for boiler rivets must be made by either the open-hearth or Clapp-Griffith process, and must not show more than 0.035 of 1 per cent. of phosphorus, nor more than 0.04 of 1 per cent. of sulphur, and must be of the best quality in other respects.

Each ton of rivets from the same heat or blow shall constitute a lot. Four specimens for tensile tests shall be cut from the bars from which the lot of rivets is made.

Tensile Tests.—The rivets for use in the longitudinal seams of boiler shells shall have from 58,000 to 67,000 pounds tensile strength, with an elongation of not less than 26 per cent., and all others shall have a tensile strength of from 50,000 to 58,000 pounds, with an elongation of not less than 30 per cent. in 8 inches.

Hammer Test.—From each lot 12 rivets are to be taken at random and submitted to the following tests:

Four rivets to be flattened out cold under the hammer to a thickness of one-half the diameter, without showing cracks or flaws.

Four rivets to be flattened out hot under the hammer to a thickness of one-third the diameter, without showing cracks or flaws—the heat to be the working heat when driven.

Four rivets to be bent cold into the form of a hook with parallel sides, without showing cracks or flaws.

Surface Inspection.—Rivets must be true to form, free from scale, fins, seams, and all other unsightly or injurious defects.

The Seattle *Press*, published in the new State of Washington, with characteristic enterprise has imitated the example of some of its Eastern contemporaries, and sent out a fully equipped expedition to survey unknown countries. The field of exploration was the extreme northwest corner of the United States, the mountain region lying between Puget Sound and the Pacific Ocean, and extending from the Straits of Juan de Fuca to Quinault Lake, and embraces an area of nearly 2500 square miles. The expedition started out last December, and the results are given in the *Press* of July 16, with maps and illustrations showing mountains, rivers, lakes and fertile valleys, whose existence were before unknown. Twenty-six mountains were named after American editors and will stand as a permanent memorial.

Boiler Rivet Material.

Cruisers Nos. 7 and 8.—Tests of Deliveries of Steel, June 17, 1890.

Material.	Elastic limit, pounds per sq're inch.	Tensile strength, pounds per sq're per cent. inch.	Elongation, per cent.	Reduction of area, per cent.	Carbon.	Mu.	Phos.	Sulph.
1 $\frac{1}{4}$ inch Low Boiler..	31,190	52,320	33.25	56.63				
1 $\frac{1}{4}$ inch Low Boiler..	31,110	51,230	31.25	56.61	0.12	0.41	0.029	0.035
1 $\frac{1}{4}$ inch Low Boiler..	31,170	51,780	32.50	56.96				
1 $\frac{1}{4}$ inch Low Boiler..	31,050	52,080	33.00	55.19				
1 $\frac{1}{4}$ inch Low Boiler..	31,110	52,080	32.75	58.49				
1 $\frac{1}{4}$ inch Low Boiler..	31,260	52,400	33.25	56.89				
1 $\frac{1}{4}$ inch Low Boiler..	31,050	51,390	32.00	49.29	0.12	0.35	0.029	0.035
1 $\frac{1}{4}$ inch Low Boiler..	31,550	51,970	30.75	51.71				
1-16 inch Low Boiler	33,190	54,100	35.25	57.68				
1-16 inch Low Boiler	32,760	58,550	33.25	59.73	0.14	0.36	0.027	0.03
1-16 inch Low Boiler	32,840	58,300	31.50	59.47				
1-16 inch Low Boiler	32,230	52,860	31.50	60.20				
1-16 inch Low Boiler	32,270	52,000	30.50	54.81				
1-16 inch Low Boiler	32,250	53,410	31.25	54.30	0.11	0.39	0.028	0.033
1-16 inch Low Boiler	32,020	51,670	32.25	55.22				
1-16 inch Low Boiler	33,200	51,620	33.00	57.54				
1-16 inch Low Boiler	32,310	52,110	31.25	58.42				
1-16 inch Low Boiler	32,730	51,550	31.25	55.78	0.12	0.36	0.028	0.033
1-16 inch Low Boiler	32,170	51,410	31.75	52.75				
1-16 inch Low Boiler	31,870	51,230	32.56	59.87				
1-16 inch High Boiler	32,560	60,270	29.50	52.11				
1-16 inch High Boiler	32,570	59,460	31.75	56.63	0.18	0.40	0.03	0.033
1-16 inch High Boiler	32,080	60,990	28.00	49.38				
1-16 inch High Boiler	32,250	59,100	28.50	56.44				
1-16 inch High Boiler	32,900	61,610	28.50	46.30				
1-16 inch High Boiler	32,680	61,260	29.75	49.53	0.18	0.50	0.03	0.035
1-16 inch High Boiler	32,880	61,850	29.00	47.10				
1-16 inch High Boiler	33,070	61,420	29.50	49.76				
1-16 inch High Boiler	32,490	60,120	30.00	49.08				
1-16 inch High Boiler	32,840	59,370	29.50	49.36	0.16	0.53	0.03	0.035
1-16 inch High Boiler	32,800	59,900	30.25	51.35				
1-16 inch High Boiler	32,670	61,460	29.50	53.57				

Shearing Tests.—45 Steel Boiler Rivets.—Driven Hot.

(From Records of United States Government Steel Board.)

Average diameter of specimen.	Average original area.	Average tensile strength per square inch, in pounds.	Average elongation in 8 inches.	Number of tests.	Nominal diameter of shearing tests.	Average shearing strength per square inch, in pounds.	Number of tests.	Shearing strength in per cent. of tensile strength.
0.624	0.3050	51,600	31.12	9	%	41,800	9	81
0.616	0.298	55,925	29.94	3	%	*57,963	6	104
0.753	0.4453	58,573	29.56	2	%	47,983	6	82
0.756	0.4490	60,250	29.75	2	%	52,248	6	87
0.869	0.5931	56,370	29.37	2	%	50,601	6	90
1.113	0.9748	56,510	31.17	2	1%	*57,177	6	101
1.246	1.219	55,390	30.60	2	1%	49,004	6	88

All rivets in single shear.

* These sets of rivets were probably hammered at low heat, which would account for the abnormal results.

fit the boiler maker as well as the manufacturer of the plate and the purchaser of

show that these steel-riveted steel boilers are probably the best boilers ever constructed.

The Government, in its marine boilers, prescribe steel rivets of the following

* Read at the New York meeting of the American boiler manufacturers.

HARDWARE.

The Condition of Trade.

While buyers are not yet at all generally placing their orders for goods required for fall trade, there is a fair activity for the season, and the indications point to an early opening of active trade. Manufacturers refer in hopeful terms to the business outlook, and that the firmness in prices has continued, notwithstanding the dullness of the month, is an encouraging feature, and the excellent condition of prices in some leading lines strengthens the expectation of a fine season's trade. With intelligent observers it is a question, in regard to the course of prices whether they will be maintained practically on their present level or be somewhat advanced. In the present hopeful condition of feeling it is not thought likely that there will be anything of a general decline, the tendency being rather the other way.

The following special telegraphic report from Chicago gives a careful review of the situation in that center:

Chicago.

(By Telegraph.)

Hardware trade shows no change unless it be an improvement in the business of the houses whose traveling men were home early in the month. Orders are coming in from them in very satisfactory volume, running sales beyond the record of previous seasons. Jobbers advanced prices of Nails, Sheet Iron and Galvanized Iron on the 29th inst. and placed Stove Boards at the factory price.

Nails.—The Nail trade is in a peculiar condition. The Wire Nail manufacturers are suffering from a scarcity of Rods, and their output has also been restricted from other causes, so that they are not in a condition to fill orders. They are notifying customers not to depend on them, but to supply themselves elsewhere, if they can do so. Cut Steel Nails are also holding up remarkably well. The manufacturers have low stocks, and are asking time on deliveries. This is a remarkable change from the condition of over production which existed but a short time since. Eastern Wire Nail mills in a position to quote ask \$2.40 at mill. Wheeling Steel Nails are quoted at \$1.85 at mill. Jobbers quote small lots of Wire Nails at \$2.60, and Cut Steel Nails at \$2.05, with 5¢ off for car-loads.

Barb Wire—Is unchanged in price, but stocks are light and the demand is satisfactory. With the present outlook for Rods manufacturers claim that Barb Wire is now too low, and an attempt to advance the price would not be unexpected. Small lots of Painted sell at 2.9¢ and Galvanized 3.5¢.

Wire Nails.

The steady and firm tone referred to in our last week's report has continued, with an advance in the prices of the manufacturers. Quotations are now on a basis of \$2.35 @ \$2.40, in carload lots, at mill.

Most of the manufacturers are understood to be well occupied with orders, the present demand being active. The market is, characterized by an excellent tone.

Barb Wire.

There has been comparatively little doing in this line, but the tone of the market is firm. Quotations are on a basis of 3.25¢ @ 3.30¢ for carload lots of four-point Galvanized at mill. Some of the manufacturers refuse to meet this price.

Miscellaneous Prices.

During the past week the market has been very steady, and there have been no important changes in leading goods.

The negotiations in regard to establishing prices on Twine have been in progress during the past week and it is thought that something has been accomplished and that the probability now is that an arrangement can be reached which will be satisfactory to the manufacturers and to the jobbers. The following scale of prices is proposed:

	Per pound.
100 bales of Flax Twine Line.....	14½ cents
50 "	15 "
25 "	15½ "
10 "	16 "
1 "	17 "

The result of the negotiations is understood to be dependent upon the decision of two or three houses who have not yet expressed their approval of the scheme.

There has been no improvement in the prices of Strap and T Hinges, and some of the manufacturers who have been holding aloof from the extreme prices made by others are now apparently more willing to make concessions. There has been a slight decline in the extreme prices at which the goods are obtainable by large buyers. Notwithstanding the fact that manufacturers refer to ruling prices as unprofitable, their solicitude for business indicates that perhaps the margin after all covers a fair manufacturing profit.

The present price of the Henis Press, the sale of which is now controlled by Paine, Diehl & Co., Philadelphia, is \$3 per dozen, and it is intimated that after August 10 it will be \$3.33 per dozen.

The trade will observe on page 198 the illustration of Seamless Tube Hose which is being put on the market by the Cleveland Rubber Company, Cleveland, Ohio. The catalogue of the company gives full information in regard to their large and varied line. The list prices on this line of goods are subject to the following discounts:

Warranted 2 X L Belting.....	40 @ 45%
" High Grade " Belting	50 & 10 @ 60%
Buckeye Belting.....	60 & 10 @ 65 & 5%
Buckeye Hose.....	65 @ 65 & 10%
" High Grade " Hose.....	50 & 10 @ 60%
High Pressure Hose.....	40 @ 45%
Buckeye Sheet Packing.....	75 @ 75 & 10%
" High Grade " Sheet Packing.....	65 @ 65 & 10%
Warranted 2 X L Sheet Packing.....	50 @ 50 & 10%
" Hyperion " Self-Vulcanizing Packing.....	50 @ 55% P D

Decker Mfg. Company, successors to Ayres & Decker Mfg. Company, Keokuk,

Iowa, will issue a new catalogue in the fall. We give below their present price list. The Maud S. Curry Comb is sold at the following prices, the discount from which is 15 per cent.:

No. 1 Maud S. Curry Comb, per gross.....	\$15.00
No. 2 " " "	16.00
No. 3 " " "	15.00

Their Hog Rings and Ringers, Wire Stretchers, &c., are sold at the following prices, which are net:

Decker's Hog Rings, per gross.....	\$9.50
" Ringers, "	11.00
Hill's Pattern Hog Rings, per gross.....	9.50
" Ringers, "	13.50
Wire Stretchers, per dozen.....	7.00
Can Openers, per gross.....	10.00
Broom Holders, per gross.....	4.25
Axtell Curry Comb, per gross.....	17.00

The following are the prices of Animal Pokes manufactured by the Eagle Machine Company, Lancaster, Ohio:

Double Stale, per dozen.....	\$5.75
Eagle Single Stale, per dozen.....	3.75
Buckeye, Single Stale, per dozen.....	2.75

Hobart B. Ives & Co., New Haven, Conn., have issued their price-list for the present year. It illustrates Ives' well-known Door Bolts and Sash Locks with the most recent additions. Among these are to be noticed Ives' patent Improved Door Bolts, made in bronze and brass metal, finished to match trimmings. There is also a new price-list of Ives' Patent Sash Locks, &c., which replaces previous lists and includes some new numbers in special finishes. The following are the list prices of the new goods referred to above, which are subject, as is the rest of the manufacturers' list, to a discount of 60 and 10 per cent.:

Mortise Door Bolts, Bronze Metal Case, Bolt and Striker.

Per doz.

No. 62, Ornamental Knob and Escutcheon, Bronze Metal, No. 1 Finish.....	\$7.50
No. 64, Ornamental Knob and Escutcheon, Bronze Metal, No. 3 Finish.....	7.50

Bronze and Brass Metal Case, Bolt and Striker.

Per doz.

No. 65, Plain Knob and Escutcheon, Bronze Metal, High Polish, No. 1 Finish.....	\$8.00
No. 66, Plain Knob and Escutcheon, Bronze Metal, High Polish, No. 2 Finish.....	8.00
No. 67, Plain Knob and Escutcheon, Brass Metal, High Polish, No. 1 Finish.....	8.00

* Sash Locks in Special Finishes.

No. 444, Plain Iron, Polished, Boston Finish.....	3.00
No. 446, Plain Iron, Bower Barffed.....	3.50
No. 448, Plain Iron, Polished, Bower Barffed.....	5.00
No. 450, Plain Bronze Metal, Polished, Antique Copper.....	8.00
No. 452, Plain Brass Metal, Polished, Antique Brass.....	8.00
No. 454, Plain Bronze Metal, Polished, Oxidized Silver.....	10.50
No. 646, Plain Iron, Bower Barffed.....	6.50
No. 648, Plain Iron, Polished, Bower Barffed.....	9.00

As the result of the consolidations which have taken place of the interests of the different Saw manufacturers, there has been an advance in prices, which has been quite marked in the cheapest goods, which were sold at extremely low figures, the goods often being of a very inferior quality. The disposition on the part of the manufacturers is to discontinue the manufacture of practically worthless Saws, and, as a result of this policy, the cheapest Saws now offered are considerably higher in price than the cheapest Saws which have heretofore been made, but are, it is claimed, of improved quality. The trade

will certainly regard with favor the removal from the market of the lowest grade which has heretofore been found in it, and they should be willing to pay more for decent goods. The manufacturers are

force prices down to their present close figures. The list given below is subject to a discount of 40 and 10 and 5 per cent., 60 days, with an additional 2 per cent. for cash in 10 days:

U. M. C. Co.'s Club Loaded Shells.

Adapted to shooting	12 Gauge.				
	Load, No.	Weight, powder.	Weight, shot.	Size, shot.	Price per 1000.
Woodcock.....	100	3 drams	1 ounce	10	\$25.00
Woodcock.....	110	3½ " "	1½ " "	10	25.50
Snipe.....	129	3½ " "	1½ " "	9	26.50
Quail.....	118	3½ " "	1 " "	8	25.50
Quail and Prairie Chicken.....	128	3½ " "	1½ " "	8	26.50
Prairie Chicken.....	138	3½ " "	1½ " "	8	27.00
Blue Rock, Ligowsky, &c.....	78	3½ " "	1½ " "	8	27.50
Live Pigeons, &c.....	148	3½ " "	1½ " "	8	28.00
Prairie Chicken, Ruffed Grouse, &c.....	127	3½ " "	1½ " "	7	26.50
Ruffed Grouse, Teal, &c.....	137	3½ " "	1½ " "	7	27.00
Prairie Chicken, Ruffed Grouse, &c.....	126	3½ " "	1½ " "	6	26.50
Pintail and Bluebill.....	136	3½ " "	1½ " "	6	27.00
Mallard.....	125	3½ " "	1½ " "	5	26.50
Mallard.....	135	3½ " "	1½ " "	5	27.00
Mallard.....	124	3½ " "	1½ " "	4	26.50
Redhead.....	154	3½ " "	1½ " "	4	27.50
Canvas Back.....	153	3½ " "	1½ " "	3	27.50
Turkey.....	152	3½ " "	1½ " "	2	27.50
Goose and Brant.....	191	3½ " "	1½ " "	BB	27.50

Adapted to shooting	10 Gauge.				
	Load, No.	Weight, powder.	Weight, shot.	Size, shot.	Price per 1000.
Woodcock.....	340	3¾ drams	1 ounce	10	\$27.50
Woodcock.....	240	4 " "	1½ " "	10	29.00
Snipe.....	249	4 " "	1½ " "	9	29.00
Quail.....	248	4 " "	1½ " "	8	29.00
Quail and Prairie Chicken.....	268	4½ " "	1½ " "	8	29.50
Prairie Chicken.....	278	4½ " "	1½ " "	8	30.50
Blue Rock, Ligowsky, &c.....	258	4 " "	1½ " "	8	30.00
Live Pigeons, &c.....	298	4½ " "	1½ " "	8	31.00
Ruffed Grouse, Teal, &c.....	277	4½ " "	1½ " "	7	30.50
Pintail and Bluebill.....	276	4½ " "	1½ " "	6	30.50
Mallard.....	295	4½ " "	1½ " "	5	31.00
Redhead.....	294	4½ " "	1½ " "	4	31.00
Canvas Back.....	293	4½ " "	1½ " "	3	31.00
Turkey.....	322	5 " "	1½ " "	2	31.00
Goose and Brant.....	352	5 " "	1½ " "	BB	32.00

14 gauge.	3 drams.	1 ounce.....	\$26.50	20 gauge.	2½ drams.	¾ ounce.....	\$23.50
16 "	2½ "	1¾ " "	25.00	20 "	2½ "	¾ " "	25.00
16 "	3 "	1 " "	26.50				

Extras.

Chilled or Buck Shot.....	\$1.00	American Wood Powder, 10 gauge.....	\$12.50
Pink Edge Wads, 12 to 20 gauge.....	1.10	Schultz Powder, 12 to 20 gauge.....	15.00
" " 10 " "	1.60	" " 10 " "	20.00

American Wood Powder, 12 to 20 gauge. \$10.00 " Ducking" Powder, 10 to 20 gauge.... \$8.00

also making an earnest effort to have prices maintained by the jobbing trade, instead of being cut to pieces, as they have been for some time. They are accordingly urging the jobbers to sell at regular prices, and it is hoped that they will succeed in this attempt. The matter is at present certainly in the jobbers' hands, and an opportunity is thus given them to realize a good profit on the goods.

The following is the revised price-list of Loaded Club Paper Shells manufactured by the Union Metallic Cartridge Company, Bridgeport, Conn., the change in the price of which was announced in our last issue. The average advance thus made is, we are advised, from 15 to 20 per cent. The reasonableness of having a revised list is generally recognized, as the one formerly in force was adopted when Loaded Shells occupied a much less prominent position than at present, and when competition and the character of the goods as leading ones in the market did not

The Seattle Hardware Co.
The Seattle Hardware Company, Seattle, Wash., have moved into their new quarters in the Colman Building, at the corner of Front and Marion streets. The event marks an era in the history of the firm, and indeed in the history of the city. When the recent great fire came the company were fortunate enough to secure what were then elegant quarters in the old car stable at the corner of Pike and Second streets, and until a few days ago they have been in that building. Previous to the fire arrangements had been made with Mr. Colman for new quarters, and the spacious wholesale and retail rooms above were built expressly for the firm. The retail store, 54 x 108 feet, is fitted up with show cases, counters and shelving at a cost of over \$6000. Under this are three basements, 27 x 108 feet. Leading across Post street to the warehouse, facing on West street, is a bridge connecting with the wholesale department, which is 108 x 117 feet. The establishment is exceptionally complete, and the retail department is referred to as excelling anything on the coast. Several new lines of goods have been added to the immense stock of the

store, and the firm are reaching out in every direction and increasing the jobbing trade, not only benefiting themselves, but largely increasing the prestige of Seattle as a trade center. In order to compete with San Francisco and Portland, purchases of Hardware are made in the East, and the firm, we are advised, now have a cargo of stock coming around Cape Horn and a cargo was recently received from Liverpool and Norway. Shipments are made daily to points east of the mountains, including the Okanagon country, Ellensburg and North Yakima, as well as to the British Columbia cities of Victoria and Vancouver. The Seattle Hardware Company commenced business in 1885, the successors of Ballard & Sox, the Burwell brothers entering into the firm with Mr. Ballard. Last spring the members of the Black Hardware Company, of Detroit, came into the firm and its present officers are: President, C. A. Black; vice-president and manager, A. S. Burwell; secretary, C. H. Black; treasurer, A. P. Burwell. The following are also stockholders in the company: M. D. Ballard, F. D. Black, John L. Simpson and E. B. Burwell. The firm employs 30 men and is one of the largest and most substantial concerns in the State.

Items.

The Peters Cartridge Company, Cincinnati, Ohio, express, through a circular letter to the trade, their hearty thanks for the messages of sympathy and encouragement and for the liberal offers of aid received from the trade throughout the country since the calamity which visited their works July 15. We are advised that they have already made arrangements for rebuilding on a much more extensive scale than before. Their shell making machinery is expected to be in operation in six or eight weeks, and they are consequently unable at present to quote prices or accept orders for either empty or loaded shells. Due notice will be given when they are ready to do so.

It is announced under date July 1 that the firm of Austin & Waller, Lawrence, Mass., has been dissolved, Mr. Waller retiring. The business will hereafter be conducted under the firm name of M. E. Austin & Co., who assume all the liabilities of the former concern and are authorized to collect and receipt all accounts due to it. O. W. Waller, recently of Austin & Waller, Lawrence, Mass., will be connected with the Rogers & Baldwin Hardware Company, Springfield, Mo., about October 1.

H. H. Barton, 222 Market street, Philadelphia, Pa., issues a circular letter to his customers, and to the trade generally, stating that in the future he will attach to every half-ream and roll of his Garnet Paper a trade-mark with his signature, and states that none will be genuine unless so signed. He takes this method of protecting his customers and himself from having inferior paper sold as his Crystal Garnet Paper.

The plant of the Alston Mfg. Company, at the northwest corner of Crittenden and Currier streets, Chicago, was partially destroyed by fire on the 24th inst., entailing a loss of nearly \$125,000. The company are engaged in the manufacture of paints and colors and occupied a large three story and basement structure. The fire originated in the basement near the front of the building. The basement was stored with empty packages and oil, which made it almost impossible for the fire department to make any headway with the fire. The flames rolled up through the second floor, and then to the third before the department made an impression on them. On the second and third floors were Color Grinding Machines and Mixers, which were

ruined. The building is divided by a fire wall running north and south through the center. But for this wall the entire factory would have burned. As it was, only the west half of it was destroyed. The loss is fully covered by insurance.

The Gage Tool Company, Vineland, N. J., send us a fac-simile of the Vicksburg, Miss., *Daily Citizen* of July 2, 1863, printed on wall paper, which has been reproduced from an original copy. It is sent to customers with the compliments of the company as an interesting historical relic. This was the last edition of the *Citizen* printed on wall paper. We are advised that those desiring copies can obtain them by inclosing a 2-cent stamp to the Gage Tool Company.

Brewer Bros., 614 to 620 Filbert street, Philadelphia, Pa., are introducing an all-wrought Thumb Latch, which, we are advised, is the only article of the kind kept in stock. They are intended chiefly for mills, warehouses and store doors, or where a latch not likely to break is required. We understand in Philadelphia they are required to be used by the fire underwriters. They are made both Light and Heavy, and Jappanned.

G. T. Nash, secretary of the Pueblo Hardware Company, of Pueblo, Col., prepared an extremely neat and appropriate souvenir for the traveling men of the T. P. A. during their recent visit. It is a watch charm made in the shape of a sledge hammer. The hammer is of solid silver, the handle is a small nail, and through the head of the nail is a copper wire by which it may be attached to a watch chain. All the materials are of Pueblo make. The silver and copper are the products of a Pueblo smelter, and the nail is of home manufacture. On the hammer is stamped "Pueblo, 1890," and "T. P. A." Mr. Nash was chairman of the committee of 300 who had charge of the Pueblo entertainment.

The office of the National Saw Company, 96 and 98 Reade street, New York, is under the efficient charge of R. L. Woodrough, treasurer and general manager of the company. They have recently sent out their travelers, from whom they receive encouraging reports both as to the condition of trade generally and the manner in which the trade regard the consolidation of Saw interests.

Ambrose Spitzmiller & Sons, Buffalo, N. Y., are making extensive alterations in their store and are erecting a four-story addition on Pearl street. This, when completed, will give them a store 235 feet long and extending from Main to Pearl streets, making, we are advised, the longest Hardware store in Buffalo. The store will be ornamental as well as practical in its appointments, and the intention of the proprietors is to carry a complete stock of Stoves and Hardware and do a general jobbing business. It is expected that the establishment thus enlarged will be in running order early in the spring of 1891.

Obituary.

Alfred E. Moore, president of The Franklin Moore Company, Winsted, Conn., died suddenly at his home July 14, 1890. Mr. Moore was 32 years of age at the time of his death. He had been suffering for some years from Bright's disease, the condition of his health not permitting him to take an active part in the business. He was educated at the Gunnery School, Washington, Conn. Since his father's death, which occurred about ten years ago, he has been president of the Franklin Moore Company, manufacturers of Carriage Tire and Fancy Bolts, Rivets, &c., and under his management the company have enjoyed continued prosperity. Mr. Moore was held in high esteem and will

be much missed in the community. The business will continue under the same management, and will in no wise be affected, his interest being retained.

Arrangement of Hardware Stores.

Chas. E. Bell, Amsterdam, N. Y., has recently rearranged his hardware store, the building having been erected for its present use in 1848, three generations of the same family having continuously carried on the Hardware business there since that time. It is a three-story building, 85 feet by 18 feet inside, with cellar; and in it is carried a line of heavy and shelf Hardware, Stoves and Tinware. In addition to these, tinsmithing, plumbing, gas and steam fitting are done. Plate glass show windows 3 feet deep are on either side of the front door. On each side of the entrance is a 12½-foot ash counter, the one on the left holding a large show case, back of which is shelving containing Cutlery and Mechanics' Tools. The counter on the right side is used for doing up goods, with scales, &c., on it. Beyond the counters the aisle divides, having a platform down the center of the store and a platform on each side for stoves. These platforms end 25 feet from the rear of the store, where a clear space 5 feet broad across the store is left for a passageway. Back of this passageway, on the left hand side, against the stairway is a Steel goods rack, with a platform underneath for platform scale, special orders of stove repairs, and newly arrived goods. Next this is an aisle running to the back door, where goods are unloaded. On the right of this aisle is a Nail counter, back of which is the proprietor's desk, commanding an unobstructed view of the entire store. Against the wall on the right and back of the stove platform are more Nail bins; and beyond, extending to the rear wall, is the bookkeepers' desk. Above the desk is shelving for catalogues, bill cases and memorandums. The second story is entirely taken up by the tin shop, plumbers' and gas fitters' branches. The center of the third story at the head of the stairs is occupied by racks for Stove Pipe, Conductor Pipe and Fittings, with overhead racks for Gutter and Heating Pipe. The rest of the space on the third floor is used mainly for storage of surplus stock and unseasonable goods. The building is heated by a furnace in the cellar. The rest of the basement is utilized for keeping Wood Pumps, Wooden Ware, Rope, Nails, Bar Iron, Gas Pipe and Stove Repairs. While the interior of the store has not remained unchanged since the building was first erected, the present arrangement is best adapted to the more modern way of doing business.

Trade Topics.

With reference to the lax system which has prevailed in regard to accepting orders without specification and subject to cancellation at the option of the purchaser, we have the following from a prominent New England manufacturer:

We think it a ruinous policy, and one which all manufacturers should discontinue. We are doing all in our power to prevent it, and will not do it to any extent. Many of our customers have been very much displeased with us on account of our declining to do it. At this time, when it seems almost impossible to get a fair profit on our line of goods without some unity of action of all makers to give uniform prices, it destroys all confidence among manufacturers to find all of some people's customers having orders entered at old prices just prior to an advance. We think the cost is disproportionate to the benefit to be derived, as we have found it

gave us no better hold of our customers. With the intense competition and evident surplus of goods manufactured of almost all kinds, and new parties coming into the field all the time who think there is no way of introducing their goods except by cutting prices, and the distrust of manufacturers of one another simply because they lose an order from a former customer and think it due to a competitor cutting prices when often it is due to many other causes, such as superior goods or importunities of salesmen, it is an evil which is very hard to remedy. We apprehend it can only be remedied by discussion and creating a sentiment among makers of the evils of the system.

W. B. Belknap & Co., Louisville, Ky., recently issued a convenient folder giving the Cut Nail card, Wire Nail card and Iron card printed in two colors and with tasty and effective arrangement. Referring to the matter of changes in Nail and Iron cards, they write as follows:

One interesting feature is to see of how recent a date the Nail cards are, one only a few months old, the other scarcely a year. The changing of cards is really nothing more or less than a species of jugglery to persuade the purchaser into paying a higher price without grumbling. The Cut Nail cards followed as near as they dared to the lead of the Wire. The Iron card, on the contrary, you will see is more than ten years old, and while changing it has often been agitated, we are convinced, that nothing would be gained by a change. Where mills to certain large consumers wish to sell at cuts or half extras, they can do so without affecting the market, but a general reduction of the card would work a hardship to certain mills who are not prepared to furnish full assortments. We cast our vote against any disturbance of it as it now stands.

Referring to the necessity of system in connection with the purchase of Hardware and the advantage of using a well-arranged price-book, a Connecticut Hardware house writes:

The hardware business is growing into such large proportions that every buyer must have a system of noting quotations made for reference when ready to buy. The writer has depended on his head for this many years, but the business has outgrown the head and I think your price-book will help me. Travelers are always anxious to quote prices, and by jotting them down in the book we can always refer to them.

Catalogues, Price-Lists, &c.

The enterprising wholesale Hardware firm of Foster & Robertson, Portland, Ore., have issued, under date July 1, 1890, a large catalogue and illustrated price-list of the goods handled by them. It is another evidence of the progressive spirit for which the Pacific Coast is famous, and indicates also the rapidity with which the Northwest is coming into prominence. The volume is 9 x 12 inches, comprising 864 pages between its stiff, cloth bound covers. The firm handle Hardware, Metals and Tinware. To their customers, in an introductory, they say that the catalogue is designed as a book of reference for the trade, and it will doubtless be found by them of great convenience in making up orders. The goods shown are such as are carried in stock. They call attention to the fact that their business is exclusively wholesale. No discount sheet is issued, owing to constantly fluctuating prices. It is stated that their endeavor is to fill all orders complete on the day they are received, and give the trade the benefit of the lowest prices ruling on the date of

shipment. A commendable feature of the index is a space left after each letter, to index subsequent leaves that may be sent out. The general arrangement and appearance of the catalogue is especially pleasing, and reflects great credit upon its authors. Their customers cannot fail to appreciate the convenience which a catalogue of this character will prove to them.

The Chicago Spring Butt Company, Chicago, Ill., issue an illustrated price-list of Spring Hinges as manufactured by them. They refer to some new goods recently put on the market, among which is a Covered Spring Screen Door Hinge, the Garden City Mammoth Spring Hinge and Blank, and the Absolute Door Spring, the latter being intended for a more powerful spring than the ordinary ones on the market.

The Moore Mfg. and Foundry Company, St. Paul avenue, Eighteenth and Nineteenth streets, Milwaukee, Wis., issue an 1890 illustrated catalogue and price-list of goods manufactured by them. The illustrated goods are Pulley Blocks, Hand Hoists, Tackle Blocks, Sash Pulleys, Dumb Waiter Pulleys, Barn Door, Railroad and Elevator Hangers, Coal and Ore Handling Machinery, Brackets, Registers and Ventilators, Coat, Hat, Harness and Floor Hooks, Hay Fork Pulleys, Chain, &c. They allude to the fact that they have completed and have now in full operation the large additions recently made to their plant, and are now able to execute all orders with satisfactory promptness. Since issuing their 1889 catalogue they have added two new Barn Door Hangers, Heel Stiffeners, Bell Cord Couplings, Elevator Locks, Fence Posts, Pickets, &c. Attention is directed to their Hoisting Machinery, which is referred to as possessing special advantages and superior merits. Their two new Elevator Door Hangers are made in various styles of ornamentation and finish, and contain their Self Locking Loose Axle. Another large addition is a line of wire workers' goods, which include neat patterns of Pickets, Rosettes, Fence Posts, Stable Fixtures, &c. Having facilities for Nickel and Bronze Plating, Fine Japanning, and for light machine work, they are prepared to give estimates on special work in Builders' Hardware and Light Machinery. Orders are solicited for Gray Iron Castings and Brass Castings.

Hunt & Mottet, Tacoma, Wash., jobbers of Heavy Hardware, Iron, Steel, Metals, Pipe, Steam Fittings, Mill, Mining, Railroad, Ship and Logging Supplies, issue a catalogue and illustrated price-list of the goods they keep in stock. This is of convenient size, of over 150 pages. The fact is alluded to that the catalogue does not show all the goods in stock, as they are constantly adding new lines and new styles, but has been issued to assist persons ordering by mail to make their selections. On the front page is a representation of their business block, Nos. 1501 and 1503 Pacific avenue.

The Hopkins & Dickinson Mfg. Company, Brooklyn, with New York office, 88 Reade street, issue a handsomely illustrated catalogue, 9 x 12 inches, of their extensive line of Builders' Hardware, of over 400 pages, bound in cloth. It is styled their architects' edition. In an introductory announcement they refer to the fact that in compiling this catalogue they have recognized the wants of their patrons and have carefully avoided the unnecessary detail and conflicting references that are the dread of dealers. A systematic classification affords ready reference to their comprehensive line. Their Columbia cylinder Locks and Latches are worthy of especial attention, as special advantages are claimed for them. Goods are shown in an extensive variety of patterns, including Rope, Grecian, Colonial, Old

English, Italian Renaissance, French Renaissance, &c. Many new features are introduced in the construction of locks and other novelties which will be of interest to the trade. Among other suggestions about ordering is one which recommends ordering master-keyed Locks in sets by floors, so that sweepers of one floor cannot have access to rooms on other floors. The catalogue will doubtless meet with a hearty welcome from the Hardware trade.

The Eureka Cement Company, of Owosso, Mich., have issued a very neat 16-page pamphlet describing their Eureka patent process for covering pulleys with leather, and giving a large number of testimonials from prominent manufacturers who have used it. In some instances very remarkable statements are made as to the saving of power after the introduction of the company's pulley covering. One user says: "Belts we were obliged to keep tight as a fiddle string we now run loose and get better results."

The Ithaca Gun Company, Ithaca, N. Y., issue an 1890 circular price-list, illustrating the Guns manufactured by them. They refer to the improvements they have been making in their gun, and advise us that the Ithaca Hammerless Guns for 1890 will all be engraved and all Hammer Guns except the "A" quality. Also that they are putting on the market 16 gauge guns of light weight, for field and trap shooting, at the same price as the 10 and 12 gauge.

The Hoffman & Billings Mfg. Company, Milwaukee, Wis., issue an 1890 illustrated catalogue of sanitary specialties. They show Water Closets, Bathtubs, Earthenware, Sinks, Marble Slabs, Wash Trays, Lavatories, Urinal Stalls, &c. Referring to their catalogue, they state that they have endeavored to present a complete list of standard sanitary goods in as concise a manner as possible, and call attention to the fact that the goods illustrated are but a part of the lines which they manufacture. They are also builders of Improved Corliss Engines and manufacturers of Brass and Iron Goods, Plumbers', Steam, Gas Fitters' and Brewers' Supplies.

Cope Bros., Detroit, Mich., proprietors of the Ideal Manufacturing Company, issue an 1890 illustrated price-list of Ideal Closet Seats, Favorite and Ideal Tanks, Ideal, Favorite, Jewel, Cyclone and Wonder Hose Trucks. They also illustrate on a separate sheet a line of five toy Ranges to which they refer as being perfect in their working. The largest is a six-hole Range, 16 inches long, 9 $\frac{1}{2}$ inches high and 8 $\frac{1}{2}$ inches wide, while the smallest has four holes and is 5 $\frac{1}{2}$ inches long, 3 $\frac{1}{2}$ inches high and 5 inches wide. They allude to their entire line of stoves as being bronzed with silver bronze, giving them the appearance of a nickel plated stove. They advise us that they are decorated in fancy colors, making them a very handsome and attractive toy.

The American Saw Company, Trenton, N. J., issue an 1889-90 catalogue descriptive of their Saws. These include Inserted Tooth and Solid Circular Saws, Mill, Mulay Gang and Cross-Cut Saws, also Mandrels, Swages and Alligator Wrenches. They also manufacture a line of Emery Grinding and Buffing Machines and Saw Makers' Tools.

Pratt & Letchworth, Buffalo, N. Y., have sent out their calendar for August on a card 9 x 10 $\frac{1}{2}$ inches. They also illustrate in blue some Buffalo malleables, such as Row Locks, Carriage Wrenches, Carriage Steps, Melting Ladle, Jointed Back Stay Iron, Toe Rail and Rub Iron.

The Chicago Rawhide Mfg. Company, 75 and 77 Ohio street, Chicago, Ill., issue a circular price-list of Rawhide Fly Nets,

Halters, Tie Straps, Hame Straps, Hame Strings, Knotted, Bridles and Harness Leather. They call attention to the fact that the above are made from the best Rawhide Leather, upon which the contact of Iron has no injurious effect whatever.

The Decatur Coffin Company, Decatur, Ill., issue sheets, giving the list prices of Eureka Spiral Screw Drivers as manufactured by them, also showing their interior construction and mechanism.

E. Covert Mfg. Company, Farmer Village, N. Y., have just issued a very neat and convenient illustrated catalogue and price-list. It is conveniently indexed through and divided into the following departments: Trimmed Neck Yokes and Neck Yoke Sundries, Carriage Goods, Saddlery Hardware, General Hardware. An interesting line of goods is thus brought to the attention of the trade, and in the constant additions which are being made to it there is indication of the enterprise and growth of the company.

The Eagle Machine Company, Lancaster, Ohio, issue an illustrated catalogue and price-list of goods manufactured by them. These cover Hand and Power Feed Cutters, Hand and Power Corn Shellers, Animal Pokes, Door and Window Screens, Revolving Carriers, Horse Powers, &c. They refer to the latest additions to their line as being, a knockdown Feed Cutter with Spiral Knife, put up in a compact form for long distance shipments; also a Double Stake Animal Poke, easily adjusted to fit either a large or small animal.

Armor, Marlin & Co., Allegheny, Pa., issue an illustrated circular and price-list of Cornices, Brackets, Finials, Crestings and Metallic Skylights. They advise us that they are the sole manufacturers of the Standard Expanding Water Conductors and Fasteners (patented), Eave Troughs in 8-foot lengths, with detachable couplings, &c. They refer to the demand for their Standard Expanding Water Conductors and Eave Troughs with Detachable Couplings as growing very rapidly. The territory over which their goods have been shipped is alluded to as extending to South America on the South and Utah on the West.

Chase, Taylor & Co., Kalamazoo, Mich., issue circulars illustrating their Standard Spring Tooth Harrows and Cultivators, and the Michigan Mill. The latter is described as cleaning, screening, separating and grading grain and seed.

The Clipper Mfg. Company, 543 West Sixth street, Cincinnati, Ohio, issue an illustrated catalogue of Household articles manufactured by them. These consist of Queen Anne Lamp, Clipper Tin Side Lamp, Little Daisy Tin Lamp, Clipper Flour Sifter, Clipper Egg Beater Spoon, Centennial Cake and Baking Pan, Clipper Condensing Coffee Pot, Wonderful Flour Bin, Clipper Parer and Corer, Little Gem Carpet Stretcher, Clipper Emery Knife and Scissors Sharpener, and Sewing Machine Relief Spring. They also describe, on separate sheets, the Clipper Jelly Cake Pans, Clipper Woven Wire Mattress and India Fiber Whisk Brooms, Dusters, Cobweb Dusters and Brushes.

The Bullard Repeating Arms Company, Springfield, Mass., issue an illustrated price-list of Repeating and Single-Shot Rifles. These are shown in Military Magazine Muskets, Carbines, Military Rifle Musket, Military Single-Shot Carbine, Target Rifles—Solid Receiver—and Detachable and Interchangeable Barrel Rifle for Target and Hunting. The Schuetzen Rifle is also described as having Detachable and Interchangeable Barrels, in calibers 32 and 38, with double triggers.

W. D. Allen & Co., 151 Lake street, Chicago, Ill., dealers in Hose, Belting, Rubber Goods, &c., issue a discount

sheet under date July 21, 1890. They call attention to the fact that, notwithstanding the advance in price of Rubber Belting and Hose made by the manufacturers June 2, in convention, they have decided not to change their discounts for the present materially.

J. R. Clancy, Syracuse, N. Y., manufacturer of Theatrical Stage Hardware, issues a unique, conveniently arranged, illustrated catalogue and price-list. The goods, mostly of iron, are of patterns and designs unusual in the regular Hardware trade, but are especially adapted to the use for which they are intended. Attention is directed to the fact that any of the goods sold by him may be ordered through the American Express Company's Purchasing Department, at places where that company has agencies.

Bradley & Hubbard Mfg. Company, Meriden, Conn., manufacturers of Gas and Oil Fixtures, Lamps, Clocks, Bronzes and Ornaments, issue a catalogue of Call Bells, Tape Measures and Stationer's Hardware, arranged especially for the Hardware trade. This shows these goods in a large variety of styles and designs, of different metals and finish.

The Climax Mfg. Company, 25 Lake street, Chicago, Ill., issue an illustrated catalogue of Tin Lamp Shades, Side Lamps, Police Lanterns, Climax Oil Can, Climax Ventilators and Chimney Caps, Lamp Burners, &c. They call attention to the fact that they are headquarters for all goods they sell.

N. R. Davis & Sons, Freetown, Mass., issue circulars and price-lists illustrating the guns made by them. The guns shown are the Davis Hammerless, the Davis Gun, new model, top lever action; muzzle loading, single and double-barrel Guns, and the Davis Breech-loading Shot Guns. Attention is directed to the excellency of material used, combined with the closest workmanship throughout. The point is made that each Gun is tested and targeted and the record sent with it, and guaranteed to do as well or better in good hands.

The James Russell Barrett Company, Syracuse, N. Y., manufacturers of Heath's Upright Hay Knives, issue a circular relating to their Knife, and make the point that, as manufacturers of a patented specialty, they are in a position to guarantee jobbers full and absolute protection against decline in prices, at the same time giving them a chance to secure for themselves a profit. The favor with which the Knife is regarded is also alluded to.

The Allentown Hardware Company, Allentown, Pa., manufacturers of Locks, Knobs, General Builders' Hardware, &c., issue an 1890 catalogue and illustrated price-list. The book is 10 x 14 inches, and contains over 400 pages. In the preparation of this catalogue they have endeavored to classify the goods, and, as far as possible, to arrange the numbers in numerical order. Each kind are classed by themselves, and each finish has the same position in any of the series of hundreds. This rule is adhered to, except in two classes of goods. Their goods are finished in Lacquer Bronze, Grant Bronze, Bronze Plated, Bronze Plated with Terminal, Ornamental Bronze, Ornamental Bronze with Terminal, Plain Bronze and Lined Bronzed or Brass.

The Brinkerhoff Company, Auburn, N. Y., are the sole manufacturers of the Crown Picture Hanger. They request that orders for these goods be sent direct to them, if their travelers should not reach customers prior to the time when orders should be placed.

The Hitchcock Mfg. Company, Cortland, N. Y., issue an illustrated catalogue of Vehicles and Harness made by them, and showing the Victor Mower. They also

send out an interesting little work entitled, Hints on Trapping, a reliable and useful guide for trappers, by an old trapper. This is used as an advertising medium.

Our Prize Competitions.

Including the competition which closes with the date of this issue the following subjects relating to the management of prices have been covered:

- No. 1.—The Care of Price-Lists.
- No. 2.—The Cost of Goods.
- No. 3.—Marking Prices.

The result of the third competition will be announced in due time, when the committee of award have had the opportunity of classifying and examining the different papers and decided upon their respective merits. It is hoped that the contributions received will embody a large amount of interesting information, and it is to be presumed that they will describe a considerable diversity of methods new and old.

The remaining competitions are of a somewhat different character from those mentioned above, and it is anticipated will call out contributions from some who were not disposed to enter the lists in Nos. 1, 2 and 3, where exact methods or more or less of clerical detail were called for. There are doubtless many good Hardwaremen painstaking and successful who have never given the care of price-lists or the recording of quotations the amount of attention which on general principles it is admitted should be given so these important departments, and who consequently were not in a position to enter in a competition relating to systems in which precise and careful methods are essential. In the remaining competitions, namely:

No. 4. Good Buying.

No. 5. Use of *The Iron Age* in Hardware Stores,

Different qualities are called for, and very many Hardwaremen will be able to give suggestions and a description of their methods, which will be interesting and serviceable. In these competitions it is probable that the contributions will take more of the form of papers or essays, embodying the results of the writers' experience, and, as it is desirable that they should be crisp and to the point, it is expected that a large number will send in their contributions.

Referring especially to the next competition, we would recall the attention of our readers to the terms in which it is announced, as these will doubtless be suggestive:

No. 4.—Good Buying.

The object of this competition is to secure papers in regard to buying. It is intended to call out information as to how advantageous prizes may be obtained, the system adopted in regard to ordering goods, and such practical suggestions in regard to the matter as will represent the principles to be followed by careful and successful buyers. In this connection an explanation should be given of the method by which the buyer is advised in regard to the goods required, whether by the use of want-book, stock-book, the records of business of the past year or otherwise. Samples should also be given of any blanks used.

FIRST PRIZE.....	\$100
SECOND PRIZE.....	50

This competition will remain open until the close of business, August 30, 1890.

Contributions are to be addressed to *The Iron Age*, 66 and 68 Duane street, New York, marked "Prize Competition No. 4."

In the discussion of this question we should value advice from experienced buyers, and if such would give expression to some of the general principles to be followed in good buying the result would be of great value, especially to younger Hardwaremen. It is obvious that the statement of the terms of the competition, as given above, is not exhaustive, and that such points as these have been left unmentioned as likely to occur to any writing upon the subject:

How to take advantage of the market.

Cautions against overbuying.

Underbuying.

To what extent is it best to buy from manufacturers?

How far to venture in buying new goods.

Information obtained from travelers.

Personal relations with sellers of goods.

It is obvious that many similar matters might be touched upon, but the selection of topics and the method of treatment is, of course, left to each competitor. This competition is open, it will be observed, until August 30.

Exports.

PER BARK BEATRICE HAVENER, JULY 8, 1890
FOR PORT ELIZABETH, SOUTH AFRICA.

By Winchester Repeating Arms Company.—1 case Gun Parts.

By Oelrichs & Co.—1 box Axles.

By A. Field & Co.—4 dozen Tools, 3 dozen Locks, 6 dozen Rakes, 25 dozen Tools, 20,000 Cartridges, 3000 pounds Nails, 6 Churns, 20 dozen Axes.

By Corner Bros. & Co.—1 Harrow and Seeder, 1 Wagon, 15 dozen Mouse Traps, 10 Scales, 5 dozen Forks, 64½ dozen Miners' Tools.

By J. Norton & Son.—48 Plows, 50 Plow Points, 150 Plow Beams, 75 pairs Plow Handles, 10 Road Scrapers, 5 Hand Carts, 24 Rifles.

By H. W. Peabody & Co.—6 Road Scrapers, 30 Ladders, 38 cases Hardware, 17,500 pounds Nails, 30 Pumps, 5 crates Washing Machinery, 30,000 pounds Barb Wire, 237 pounds Sash Cord, 42 cases Sash Weights, 450 feet Hose, 26 packages Ladders, 5500 pounds Nails, 44 cases Sash Weights, 234 pounds Sash Cord.

By Coombs, Crosby & Eddy.—5106 pounds Barb Wire, 3 Corn Shellers, 3 stoves, 3000 pounds Nails, 6 dozen Meat Choppers, 14 dozen Hammers, 8 dozen Carpenters' Tools, 12 dozen Hardware, 18 Ladders, 5½ dozen Edge Tools, 20 Plows, 1 Road Scraper, 4½ dozen Hardware, 3 Plows.

By W. H. Crossman & Bro.—3 sets Axles, 2 cases Feed Cutters, 1 dozen Churns, 1 Seed Sower, 1 case Picture Cord, 1 case Rubber Hose, 300 feet Rubber Hose, 3 Stoves, ½ dozen Churns, 14 pounds Nails, 1 dozen Tills, 2 packages Brushes, ½ dozen Scales, 8 dozen Agricultural Implements, 13 packages Hardware, 14 dozen Hardware, 5 cases Hardware, 1 Iron Casting, 25,000 pounds Barb Wire, 7 cases Hardware, 10 dozen Agricultural Implements, 5 Churns.

PER SHIP FRANK PENDLETON, JULY 9, 1890, FOR SYDNEY, N. S. W.

By Collins & Co.—102 dozen Edge Tools.

By L. H. Mace & Co.—28 Refrigerators.

By W. K. Freeman.—20 dozen Axes, 1095 pounds Hardware.

By Meriden Britannia Company.—10 packages Platedware, 2 boxes Platedware.

By Rogers, Smith & Co.—11 packages Platedware, 1 box Platedware.

By H. W. Peabody & Co.—4200 pounds Nails.

By Winchester Repeating Arms Company.—25 Guns, 2000 Empty Shells, 12,000 Cartidges.

By Edward Miller & Co.—61 packages Lamp Goods.

By G. B. Nicholson.—1 box Iron Rakes, 8 boxes Forks, 49 cases Hoes, Rakes, Forks and Handles.

By W. H. Crossman & Bro.—4 dozen Scales, 20 dozen Hammers, 6600 Bolts, 14 dozen Hoes, 7 dozen Saws, 3 dozen Brackets, 12 dozen Cutlery, 6 dozen Sifters, 1 dozen Lawn Mowers, 214 pounds Tacks, 11,186 pounds Barb Wire, 4 cases Hardware.

By R. W. Forbes & Son.—2 packages Carriage Hardware, 2 cases Carriage Hardware, 1 case Carriage Hardware.

By V. Basanta.—7399 pounds Fence Wire and Staples, 5 dozen Braces, 5 dozen Sad Irons and Handles, 2 dozen Choppers, 10 dozen Braces, 1 dozen Wagon Jacks, 12 Corn Shellers, 15 dozen Axes, 20 dozen Spades, 1 dozen Wringers, 24 dozen Wire Goods, 15 dozen Brushes, 36 dozen Bird Cages, 10 dozen Saws, 9 dozen Scythes, 1 dozen Lanterns, 3 cases Enamelled Platedware, 13 packages Enamelled Platedware, 112 pounds Washita Stone, 2 dozen Money Drawers, 6 dozen Grindstone Fittings, 30 dozen Twine Boxes and Locks, 33 packages Lamp Goods, 1 case Lamp Goods, 9 dozen Rakes.

By Coombs, Crosby & Eddy.—10 dozen Axle Grease, 10 dozen Axes, 3½ dozen Wringer Fixtures, 12 dozen Axle Grease, 3 gross Axle Grease, 2 Freezers, 1 dozen Washers, 1 gross Traps, 3 1-6 dozen Freezers, 5½ dozen Wringers, 1 dozen Scales, 3 dozen Churns, 18 Lawn Mowers, 10 dozen Axes, 24 dozen Hatchets, 2 dozen Carpet Sweepers, 18 dozen Egg Beaters, 12 dozen Bird Cages, 1 gross Axle Grease, 4 dozen Wringers, 4 dozen Stoves, 18 Lawn Mowers, 12 dozen Egg Beaters, 23 dozen Broilers, 9 dozen Lemon Squeezers, 12 dozen Mouse Traps, 30 dozen Kitchenware, 18 dozen Braces, 18 dozen Hammers, 47½ dozen Saws, 3 dozen Pumps, 6 dozen Ladders, 40 dozen Hardware, 18 Refrigerators, 17½ dozen Hardware, 15 dozen sets Irons.

By Arkell & Douglas.—1800 pounds Farm Wagons, 1433 pounds Iron Castings, 7854 pounds Axes, 554 pounds Carriage Hardware, 897 pounds Carriage Castings, 48 cases Harvesters and parts, 119,300 pounds Harvesters and parts, 340 pounds Castings, 400 pounds Machine Knives, 3820 pounds Paper Cutters, 4080 pounds Evaporating Machinery, 6 dozen Braces, 2 dozen Wringers, 24 dozen Forks, 6 dozen Snaths, 3½ dozen Churns, ½ dozen Jacks, 12 Stoves, 3 dozen Saws, 5 gross Axle Grease, 3 dozen Brackets, 6 dozen Lanterns, 6 dozen Traps, 1 dozen Seed Sowers, 12 dozen Axes, 25 dozen Axes, 8 dozen Forks, 6 dozen Snaths, 2½ gross Fruit Jars, 2 Seed Sowers, 3 dozen Hammers, 6 dozen Hatchets, 5 dozen Picks, 9 dozen Saws, 1 dozen Rakes, 6 dozen Lanterns, 1½ dozen Churns, 24 sets Axes, 216 pounds Castings, 132 dozen Churns, 2 dozen Wringers, 8 dozen Gas Stove Fixtures, ½ dozen Mowers and parts, 3 dozen Saws, 90 dozen Cow Bells, 3 dozen sets Stencils, 1 dozen Scales, 9 dozen Boring Machines, 336 pounds Oil Stone, 3 dozen Churns, 3 dozen Braces, 3 dozen Hammers, ½ gross Glue, 3220 pounds Bolts, 8 dozen Picks, 4 dozen Platedware, 62 dozen Levels, 9 dozen Wrenches, 102 dozen Corner Brackets, 3 dozen Shellers, 50 dozen Forks, 9 dozen Rakes, 11 dozen Hammers, 30 dozen Wrenches, 1120 pounds Bolts, 9 dozen Platedware, 22 dozen Lamp Goods, 3 dozen Wrenches, ½ dozen Scales, 890 pounds Castings, 912 pounds Bolts, 5 gross Glue, 40 dozen Blocks, 7 dozen Axes, 26 dozen Blocks, 3 dozen Braces, 2 Freezers.

PER SHIP LEADING WIND, JULY 9, 1890, FOR DUNEDIN, NEW ZEALAND.

By R. W. Forbes & Co.—178 packages Reapers and Binders, 1 case Traps, 5 cases Edge Tools, 5 crates Churns, 22,400 pounds Barb Wire, 27 packages Hardware, 800 pounds Nails, 20 cases Hardware, 700 pounds Nails, 3 crates Churns, 11,200 pounds Barb Wire, 2 cases Hardware, 22,400 pounds Barb Wire, 2 packages Packing, 1 case Hardware, 1 case Forks, 3 cases Bolts and Nuts.

By H. W. Peabody & Co.—4 packages Hardware, 5 cases Forks, 70 packages Agricultural Machinery, 35 packages Hardware, 2 packages Pumps, 7 packages Lampware, 14 dozen Churns, 1 case Nails, 6 Trucks, 3 cases Wagons, 3 cases Bolts, 27 sets Axes, 1 case Iron Castings, 11 cases Hardware, 900 cases Harvesting Machinery, 62 cases Agricultural Implements, 62 packages Agricultural Machinery, 277 packages Agricultural Machinery.

By Dunbar, Hobart & Co.—6720 pounds Nails.

By W. A. Wood.—409 packages Harvesters and Binders.

By Strong & Trowbridge.—3 dozen Grindstone Fixtures, 5 reams Sandpaper, 2 Saws, 20 pounds Stone, 60 Pulley Blocks, 11 dozen Locks, 10 dozen Forks, 5200 Bolts, 10,000 Nails.

By Arkell & Douglas.—6 dozen Pumps, 4 Scales, 8½ dozen Pumps, 112 pounds Castings, 3 gross Snap Hooks, 4 dozen Hames, 1 gross Snaps, 3 dozen Knives, 10 dozen Axes, 1 dozen Revolvers, 3 dozen Pumps, 210 pounds Castings.

FOR LYTTLETON.

By W. H. Peabody & Co.—1000 pounds Nails, 3 cases Hoes, &c., 9 cases Hardware, 2 packages Pumps, 3 dozen Curry Combs, 9 dozen Forks, 3 dozen Traps, ¼ gross Match Safes, 1200 pounds Barb Wire, 171 packages Agricultural Machinery, 60 packages Harvesting Machinery.

By R. W. Forbes & Son.—338 packages Reapers and Binders.

By Dunbar, Hobart & Co.—3360 pounds Nails.

By H. W. Forbes & Son.—1 box Hardware.

By Hoadley & Co.—4 cases Hardware, 34 dozen Axe Handles, 8 dozen Axes, 2 dozen Hatchets, 2 cases Agricultural Implements.

FOR NELSON.

By McLean Bros. & Rigg.—2 dozen Lawn Sprinklers, ½ dozen Miter Boxes, 300 Kettle Scrapers, 2 dozen Picks, 2 cases Hoes, 1 bundle Seed Drills, 2½ dozen Plows, 30 Stoves, 4 dozen Sash Cord, ½ dozen Mangles, 20 dozen Scales, &c., 4500 Cartridges, 1 Gun, 2 dozen Saws, 16 boxes Nails, 6 Lawn Mowers, 6 dozen Egg Beaters, ½ dozen Meat Choppers, 4 dozen Picks, 20 dozen Axes, 36 boxes Nails, 2 dozen Bush Hooks, 6 dozen Hammers, 1120 pounds Nails, 2 Meat Choppers, 2 dozen Locks, 25,000 Cartridges, 7 dozen Braces, 15 cases Hardware, 9 packages Lampware, 17 Churns, 19 dozen Glue, 9 dozen Rakes, 36 dozen Forks, 84 pounds Oil Stone.

REVIEW OF THE WHOLESALE MARKET IN PAINTS AND OILS.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Paints and Colors.

Jobbers have experienced a good summer season trade in the staple lines of Paints and Colors during the past week, and the movement from first hands is also represented as being all that reasonably could be expected. Apart from this there is nothing of interest to remark save that values for nearly all the leading commodities hold quite steady, and that existing conditions are without indication of any radical fluctuations in the immediate future. In the so-called "cheap paints" competition is keen, and prices for them are as variable as the quality of goods on sale, but proprietary articles in this line that possess merit seem to hold their own in competition with the poor stuff. On imported bulk materials the only striking change is on Block Chalk, sales of which are said to have been made at as low as \$1.75 per ton, ex-vessel.

White Lead.—There is no visible change in the condition of the market for this pigment. Jobbers' prices for the standard brands seem still to be governed chiefly by the character of orders for other goods that their customers may place, the corroders' list prices and terms having little if any consideration. As pure Lead continues to move off to a fairly satisfactory extent, in the face of unceasing efforts of manufacturers of mixed Leads to work in their productions, the corroders identified with the Lead Trust adhere to old rates. Under existing conditions orders for small quantities go chiefly to jobbers, and the manufacturers are doing little in lots of less than 5 tons, but obtain nearly or quite as much for the larger quantities as the jobber charges for a few packages. Cheap Leads rule irregular, ranging from 5½¢ down to 4¢, or less, according to quantity.

Red Lead and Litharge.—Prices for these commodities are without change, and the movement at the present time is rather light.

Zincs.—In the absence of any change in the situation from the supply and demand point of view, manufacturers of American Oxide adhere to the former line of prices.

Foreign brands are also unchanged. The dealings at present are on a rather small scale.

Colors.—For the general line of house-painters' Colors there has been about the usual demand for this season of the year, and the staple lines of grinders' Colors has also had fair sale. Paris Green and insecticides generally have been rather quiet. Variations in prices are slight and the general market preserves a steady tone.

Miscellaneous.—Block Chalk has been sold at as low as \$1.75 ex ship, to arrive, and \$2 is considered outside value for spot lots. Whiting is barely steady, some brands being occasionally let go at a shade under 40¢ for Common. Paris White is without material change in value and rather quiet.

Oils and Turpentine.

Outside of Crude Menhaden Oil, in which exporters are showing a fair degree of interest, there has been very little movement in the Oil trade apart from the ordinary jobbing distribution, and prices have undergone slight variation only. The general situation is much the same as it was a week ago. All indications point to a good crop of Flaxseed, but crushers manifest no disposition to lower the prices for Oil. The Cotton Seed crop also promises to be large, and the Oil products are already selling on a basis of cheap raw material. Menhaden Oil, too, which is moving at as low figures as could be expected, were taken in much larger quantities than they have been thus far this season, and other Oils, Cocoanut excepted, are moving at what may be termed reasonable figures.

Linseed Oil.—There is still more or less talk of outside brands selling at low prices, but facts in support of some of the claims made are wanting. City crushers assert that they find no trace of business here at less than 59¢, and their prices are held firmly at 62¢ for Domestic and 64¢ for Calcutta Seed product. The current trade is of fair volume.

Cotton Seed Oils.—Low grades of both Crude and refined product have had fairly liberal movement, and there is yet quite a good demand for those qualities, but very little for prime stock. Prices are still more or less in buyers' favor, but not quotably lower than they were a week ago.

Menhaden Oil.—Fully 2300 barrels Crude have been sold this week, chiefly at the basis of 21¢ for good merchantable quality, the greater portion of which is believed to have been taken by exporters. Reports as to the fishing indicate variable results, but the supply of Oil coming forward suggests that there is an ample supply. Prices for Pressed and Bleached products are unchanged, but rather weak.

Lard Oil.—City and outside brands are selling at practically the same figures, 49¢ @ 50¢, for present make—prime—and the trade is of about the usual volume.

Sperm and Whale Oils.—Last sales of crude Sperm were 62½¢ in New Bedford, and prices for the manufactured Oils remain unchanged. There is nothing new in Whale Oil, crude or manufactured.

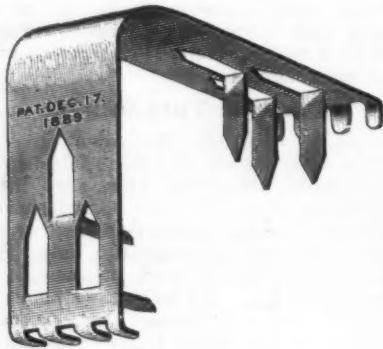
Miscellaneous.—Cocoanut, Olive and Palm Oils are firm at about previous prices, but selling to a moderate extent only.

Spirits Turpentine.—Large lots are quoted at about 42¢ here, but buyers at that price are few, and the market shows a rather weak tone. Supplies are quite heavy at all points. At New York, Savannah, Charleston and Wilmington there is now an aggregate supply of about 30,000 barrels.

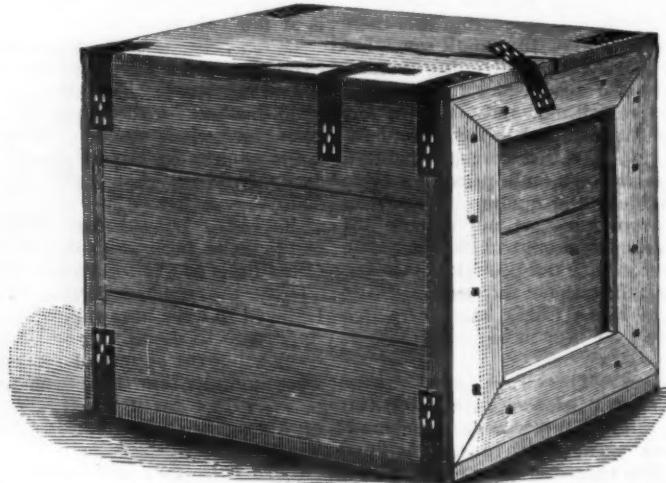
The Newark, N. J., assessable valuations have been increased \$10,000,000. The city and county tax rate will be the smallest in many years.

De Haven Mfg. Company's Novelties.

The De Haven Mfg. Company, 118 to 120 Front street, Brooklyn, N. Y., are introducing light metal novelties, as illustrated herewith. Fig. 1 represents their clutch nail, made of perforated steel and requiring no nails to fasten them, intended to take the place of the ordinary box strap, and described by the manufacturers as having many advantages over the plain strap iron used for this purpose. Among the numerous places where it can be used

Fig. 1.—*DeHaven Clutch Nail.*

to advantage is binding two boards together where they spring on the side of a heavy case; or they may be put over the corners of boxes, or where a board splits. They may be used either straight or diagonally, and in many ways not suggested in Fig. 2. These are made in regular sizes, $3\frac{1}{2} \times \frac{1}{2}$, $3\frac{1}{2} \times \frac{3}{4}$, $4 \times \frac{3}{4}$, 6×1 . Special sizes will be made to order. Fig. 3 shows their box strap, consisting of cylinder

Fig. 2.—*Clutch Nail Used on Boxes.*

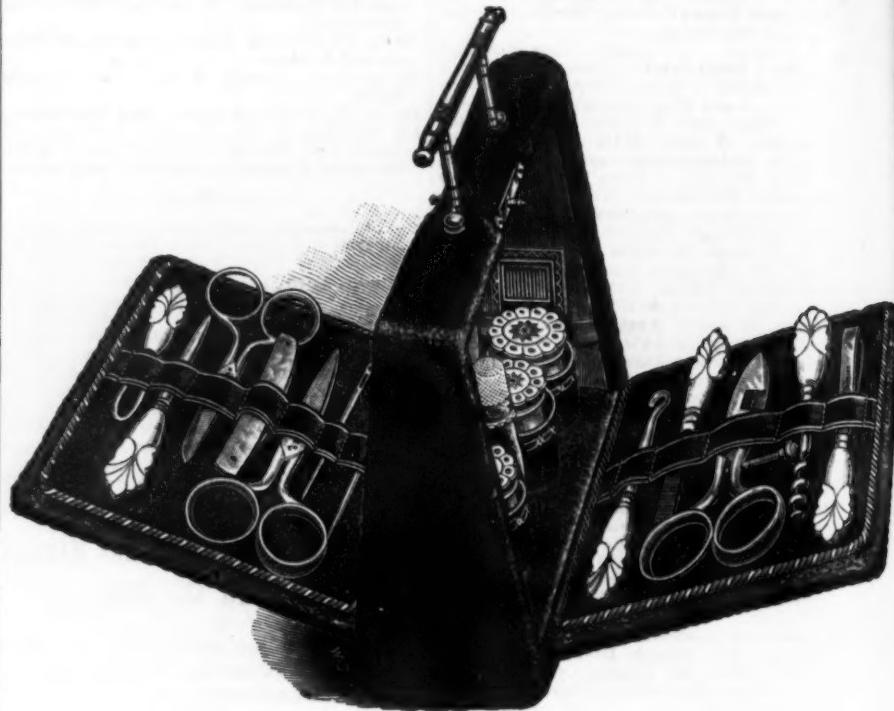
shaped steel pieces, split part way, to form prongs, the heads being riveted to strap steel. The prongs are intended as

satchel shape, and contain three pairs of nickel plated bow scissors, one pair of which are button hole; two bladed pearl

sterling silver thimble, steel bodkin, two papers of needles, four spools of sewing silk, also four carved pearl reels for the spools. These cases are made in the following styles: Plush; calf, embossed to

The Ladies' Companion.

A. J. Jordan, manufacturer of "AAA1" cutlery, St. Louis, Mo., is introducing a Ladies' Companion, as illustrated herewith,



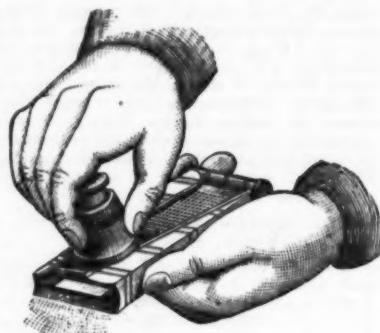
The Ladies' Companion.

making acceptable holiday or birthday present. These goods are made in Sheffield, England, and are filled with his "AAA1" cutlery. They are made in camp or

illustrate leaves; finest calf covered, and Persian leather. They are lined with silk velvet and satin. The dimensions closed are 6 inches long and 4 inches high, tapering width.

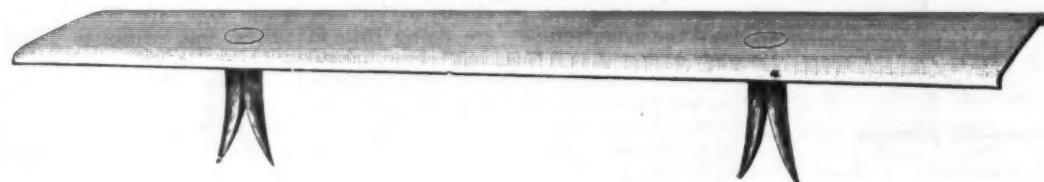
Unique Nutmeg Grater.

The Steel Edge Stamping and Retinning Company, 89 State street, Boston, Mass., are introducing the Unique nutmeg grater,



The Unique Nutmeg Grater.

as illustrated herewith. The grater is of perforated tin with a wooden holder for the nutmeg, and a conveniently shaped

Fig. 3.—*DeHaven Box Strap.*

substitutes for nails in strapping boxes. The company also sell the plain strap in lengths or on reels.

handle penknife, carved pearl handle nail file, cork screw, tweezers, button hook, crochet needle, stiletto and glove loop,

wood handle at the end to hold the grater by when in use. The Unique grater is referred to as grinding up all the pieces,

and in this saving of nutmegs soon pays for itself. Allusion is made to the transverse motion, which is intended to keep the cutting parts from clogging. The grater is simple in design, and constructed in such a manner as to be durable.

New Pear and Apple Corer.

The Clark Novelty Company, Rochester, N. Y., are manufacturing this article, which is represented herewith. These



New Pear and Apple Corer.

tools are described as manufactured with extra large handles, so as not to cramp the hand. The steel is extra heavy, and the two edges are sharp, making the device both right and left handed, while the shape conforms to large or small core.

The Chicago Wagon Jack.

A new wagon jack which embodies some excellent features is herewith illustrated. It is made with a standard or body of wrought iron pipe, to which is attached an adjustable lifting rod composed of steel and threaded. A clutch with threaded jaws holds the lifting rod in position. When the clutch is pressed back the rod slips down inside the pipe body. The lifting rod is adjustable to any height for a wagon or carriage. The handle of the jack is so constructed that it is pushed



Chicago Wagon Jack.

down to raise a wagon axle, when it will lock itself and will not fly up until force is applied to move it. The best materials are used. The lever is of the best gray iron, the lifting rod of steel, the clutch of gray iron, and the body of wrought iron,

everything about it being iron or steel, except the handle. Three sizes are made to suit varied requirements. The Comstock & Wing Nickel Works, 236 to 240 Carroll avenue, Chicago, are the sole manufacturers.

Hinge Mortising Tool.

A new tool for facilitating the work of the carpenter in making mortises for hinges has just been brought out by the Storms Mfg. Company, 236 to 240 Carroll avenue, Chicago. Illustrations are herewith given to show the tool and the details of its working parts. Fig. 1 represents it in

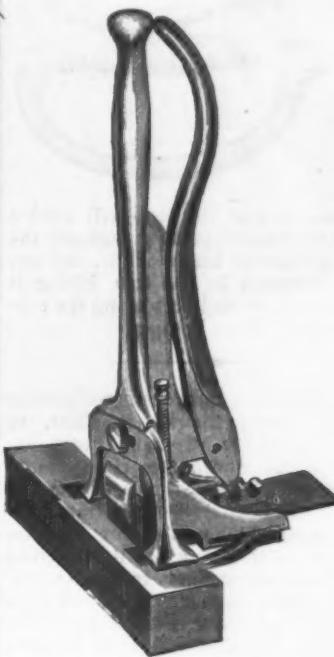


Fig. 1.

manufacturers state that this tool is in successful use already by cabinet makers, piano manufacturers, carpenters and other wood workers. It not only saves time and labor, but is also much more accurate in doing its work than the hand can possibly be. It is made of the best material and in two styles. The single tool is for factories using largely one length of hinge, but any desired length can be obtained with it by taking one or more cuts. The combination tool is adjustable in length as well as in width and depth. Four sizes of the single tool are made, cutting 1½, 1¾, 2⅓ and 2 inches in length. The combination tool cuts from 1½ to 2 inches in length. Larger sizes are in process of construction.

The Victor Car Mover.

S. H. St. John, 118 and 120 North avenue, Chicago, has recently put on the

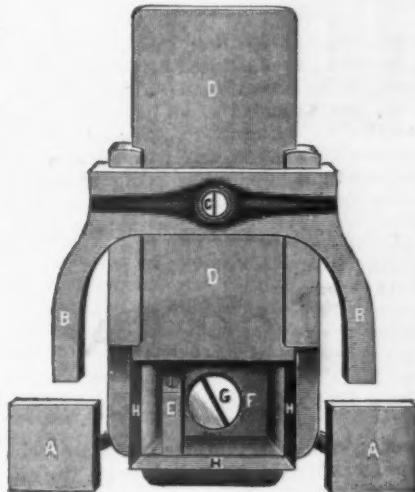


Fig. 2.

The Mackenzie Hinge Mortising Tool.

position for operating on a piece of wood. A blow from a mallet on the upright forces a set of knives on the bottom into the wood, until their further progress is stopped by the two square supports shown on the sides. These supports operate as gauges, and can be set for a shallow or deep cut by the knives, as desired. The

market a car mover or pinch bar which is meeting with much favor. It is made throughout of the best steel, weighs but 18 pounds, and is 5 feet long. As will be seen by the accompanying illustration, the bar has a wedge-shaped end to be thrust under the car-wheel which moves the car instead of lifting the wheel. An ingenious



The Victor Car Mover.

lever is then pulled down, which forces a knife in horizontally, cutting out the wood in one piece. Fig. 2 shows the working parts in the bottom of the tool. A A are the adjustable depth gauges. B B are the width gauges. C is the screw to lock the latter. D is the sliding knife. E is the chip expeller. F is the block for clamping the stationary knives, and G is the screw holding it. H H H are stationary knives, making the vertical cut. The

device is the application of the fulcrum, the parts of which are shown in the cut above the bar. A piece of square ¼-inch steel rests on the rail and is held in place by a clevis-shaped piece which is fastened to the bar by a set screw. The sharp corner of the steel bottom coming against the rail prevents the bar from slipping. When a corner gets worn by service the set screw is loosened, the bottom piece is taken out and turned until all four cor-

ners have been worn off. It is claimed that this pinch bar stays on the rail and does not slip on oily or frosty rails, that it will work under all brakes, and that with it one man can move three or four loaded cars at once with comparatively little effort.

The Schollhorn Tension Spring.

The American Knife and Razor Company, St. Louis, Mo., have secured ex-

reversible part. It is applied to the bottom of the door, as shown in the cut. The door may be held at any point desired, Fig. 1, or opened further without changing the stop, but to close the door partly or wholly the stop must be reversed, Fig. 2. It is described as working satisfactorily on carpet or oilcloth, and also upon wooden or tile flooring; and, as the rubber only comes in contact with the floor, there is nothing to scratch or injure. The

New Seamless Tube Rubber Hose.

The Cleveland Rubber Company, Cleveland, Ohio, are introducing a seamless tube rubber hose, as illustrated herewith, of which they are the patentees and ex-

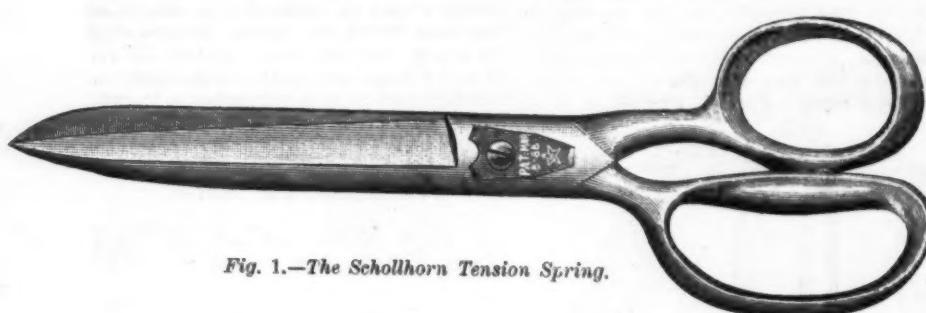


Fig. 1.—The Schollhorn Tension Spring.

clusive sale of the Star shear, with tension spring, as illustrated herewith. This spring is the invention of William Schollhorn, and is alluded to as being the most practical adjusting device in use. It can be set with a screw-driver to work either loose or tight; the screw being arranged so as not to get loose, the wear is thus taken up. The resulting advantage of the

point is made that the stop will hold a door in any desired position against the strongest springs or heavy winds, and can be readily reversed by the foot, lifting it free from the floor, and presenting the rubber surface for a door bumper.



Fig. 2.—Details of Tension Spring.

tension spring is that the edges are held true, making the work lighter on the operator, also obviating the necessity of sharpening the shears so often.

Clark's Patent Combined Door Stop and Bumper.

Sargent & Co., 37 Chambers street, New York, are introducing the Clark's Patent

Respecting the proposed reciprocity treaty with Brazil, Charles R. Flint, of this city, a banker of many years experience in the South American trade, says: "Since coffee was placed on the free list of the United States, Brazil has collected \$100,000,000 in export taxes on that article. Yet to-day Brazil is offering a market for our products free if we will remove the duty on her sugars. If Congress would legislate to throw \$50,000,000 into the sea, it would not be a more ill advised course than to throw away this chance to open a market for our products. Unfortunately a simple business proposition has become complicated with other interests not directly bearing on it, and involved with partisan politics and personal ambitions. If the farmers, merchants and manufacturers

Old Lapped Tube Rubber Hose.

clusive manufacturers. The great feature of this improvement, as explained by the manufacturers, is that it does away with the seam, or lap, in the rubber tube. The seamless hose is made by running a seamless tube, somewhat after the manner of lead pipe. In defective hose the trouble is said to originate, in the great majority of cases, by the water working through



New Seamless Tube Rubber Hose.

the seam in the rubber lining, decaying and impairing the strength of the duck. The above company advise us they are now prepared for making steam, brewers', acid and oil hose with this seamless rubber tube or lining, the advantages of which, in special hose of these kinds, cannot be overestimated, as the liability to defects in the tube is reduced to a mini-

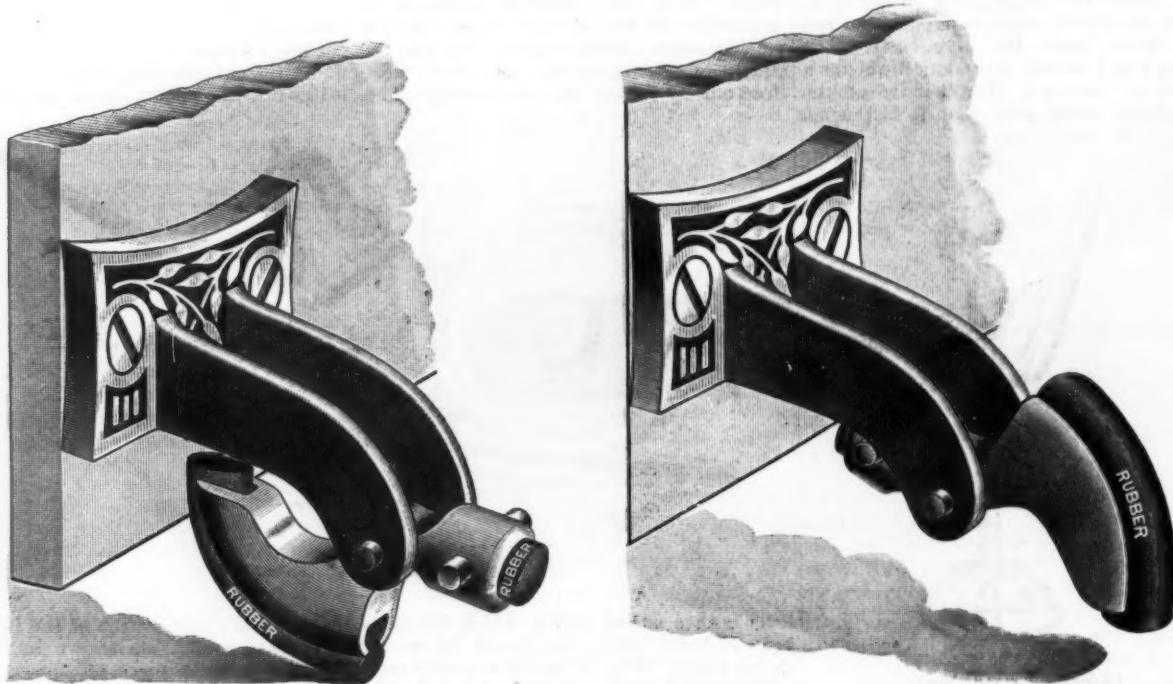


Fig. 1.—Clark's Stop and Bumper.—Holding the Door Partly Open.

Fig. 2.—Reversed to Act as a Bumper.

Combined Door Stop and Bumper, as illustrated herewith. These are made of both malleable iron and bronze metal, with rubber cushions on both ends of the

would call meetings of their trade associations and discuss this question, it would be treated as it should be, on a purely practical basis."

mum, and the fluid which is being conducted through the hose cannot therefore penetrate to and destroy the duck. The results from this season's output of 4-inch

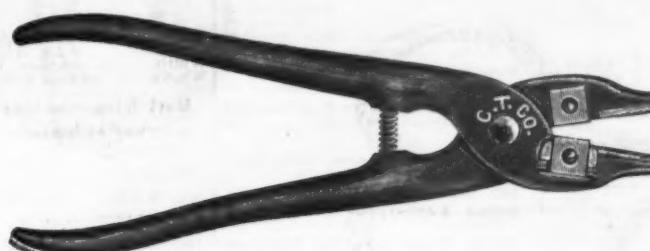
seamless garden hose are referred to as demonstrating the value of the improvement.

Combination Plier and Wire Cutter.

The Cincinnati Tool Company, 216 to 222 West Second street, Cincinnati, Ohio, are introducing a combination plier and

Cheyenne, the Chief City of Wyoming.

Much attention has been drawn to Wyoming by reason of its becoming a State in the Union. Its future is thought to be very good on account of its mineral resources, which are as yet in an almost undeveloped condition, although enough work has been done to develop something



Combination Plier and Wire Cutter.

wire cutter, as illustrated herewith. The jaws and knives are referred to as being made of the very best steel; the knives, being exactly square, can be used on all four sides before they require sharpening. The knives are also alluded to as being interchangeable, so that broken ones may readily replaced.

The Novelty Pocket Screw Driver.

The Empire Knife Company, West Winsted, Conn., are introducing the Novelty pocket screw driver as illustrated herewith. Fig. 1 shows the screw driver with the blade

of their limits. Cheyenne is now and probably will remain its chief city. It has at present about 10,000 population, but with much the appearance of a prosperous and growing Western town. On account of its central location the Union Pacific Railroad system is placing there its principal shops. A large plot of ground about 4200 feet long by 700 feet wide, has been secured near the center of the town, and a series of shops are being erected which is ultimately to cost \$6,000,000 and to employ 3000 men. These shops will be the largest belonging to the company. The contract with the city calls for the completion of the whole plant within five



Fig. 1.—Novelty Pocket Screw Driver, Open.

projected for use; Fig. 2 which is a full size cut, shows the blade retracted to be carried in the pocket. The article is referred to as being self-operating, requiring the use of one hand to instantaneously project or retract the blade. The directions given to do this, are to hold the point downward, and with the ball of the thumb on the thumb-piece, press inward and backward, the blade will drop at full length and be securely locked in place; to retract it, turn the point upward, and repeat the operation, the blade will drop

years, and in return the city grants free water in perpetuity. Many of the shops have been already erected, while the buildings alone, to be erected in 1890, call for an expenditure of \$228,000. The dimensions of the principal buildings are: foundry, 80 x 290; boiler shop, 130 x 460; store house, 50 x 300; blacksmith shop, 80 x 368; car shops, 95 x 275; wood shop, 80 x 275; repair sheds, 70 x 300; two paint shops, each 150 x 194, and an engine house with 40 stalls. In addition there are coal pockets, sand pit, fuel house, oil



Fig. 2.—Novelty Pocket Screw Driver, Closed.

back into the handle, and the thumb-piece closing the opening will effectually exclude dirt or moisture. The frame of the screw driver is described as being of cast bronze metal, the sides of cocoa or ebony wood, and the blade of best English steel. The point is made that the screw driver will sustain as great a twist without yielding as any, as the cross rivet is intended to take the entire strain off the thumb-piece. These are intended for the use of electricians, bicyclers, operators on sewing machines, and all who need a simple, strong, durable, handsome, self-operating screw-driver.

house and various other smaller buildings, making up one of the most complete railroad plants in the country. The machinery used will be of the latest and best designs and specially adapted for the work it has to do. In the boiler shop is a punch and shear of the Long & Alstatter Company's make, which is one of the three largest in the United States. The two others are used by the Government in the navy yards. Two 40-ton traveling cranes, to be worked either singly or together, and to be operated entirely by electricity, are now being erected in the machine shop. They were made by the

Shaw Electric Crane Company, of Milwaukee, Wis., and are of recent invention, the patent being granted on June 17, 1890. The whole shops are lighted by electricity on the Edison system, and a complete set of dynamos are erected in the boiler room. An iron viaduct to cross the shop track was to have been erected by the city, but the railroad company have lately agreed to erect it at their own expense, and allow the city five years time in which to pay the cost of the road. This has been agreed to by the city, and work will begin immediately. The viaduct is 900 feet long, and is to cost \$45,000. It is believed that with the advent of State government Cheyenne will greatly increase, and will become in time one of the manufacturing points in the West.

Montreal papers notice the failure of the shipbuilding firm W. & G. Tait, with \$86,000 liabilities.

CONTENTS.

The Trenton Automatic Engine. Illus.	167
The Colorado Midland Tunnel.	168
The Mechanics' Fair in Boston.	169
Seagoing Steel Barges.	169
Standard Thickness of Boiler Plates.	170
Virginia Iron Notes.	170
Cultivating Mexican Trade.	171
New England Miscellany.	171
Electric Elevator. Illustrated.	172
Effects of the Silver Bill.	172
Southern Miscellany.	173
Tap Driving Head. Illustrated.	174
Emery Wheel Dresser. Illustrated.	174
Obnoxious Bills of Lading.	174
Providence Notes.	174
Electric Motors for Isolated Machines. Illustrated.	175
The Sault Ste. Marie Canal.	176
The Week.	176
Manufacturing: Iron and Steel, Machinery, Hardware, Miscellaneous.	177, 178
Editorials:	
The Cost of Bessemer Steel.	179
Decadence of Farming, Its Causes and Consequences.	180
Bankruptcy in the Argentine Republic.	180
Preventing Soft Coal Smoke.	180
The Supply of Old Rails.	181
Obituary.	181
Washington News.	181
The Value of Self-Fluxing Ores.	182
Trade Report: Chicago, Philadelphia, Cincinnati, Cleveland, Louisville, Detroit, Chattanooga, St. Louis, Pittsburgh, New York, Metal Market, New York Metal Exchange, Coal Market, Financial, Imports, British Iron and Metal Markets.	183-188
Use of Alloys in Metal Work.	188
Steel Rivets.	189
Hardware: The Condition of Trade, Wire Nails, Barb Wire, Miscellaneous Prices, The Seattle Hardware Company, Items, Obituary, Arrangement of Hardware Stores, Trade Topics, Catalogues, Price-Lists, &c., Our Prize Competitions, Exports.	190-195
Review of the Wholesale Market in Paints and Oils: Paints and Colors, Oils and Turpentine.	195
De Haven Mfg. Company's Novelties. Illustrated.	196
The Ladies' Companion. Illustrated.	196
Unique Nutmeg Grater. Illustrated.	196
New Pear and Apple Corer. Illustrated.	197
The Chicago Wagon Jack. Illustrated.	197
Hinge Mortising Tool. Illustrated.	197
The Victor Car Mover. Illustrated.	197
The Schollhorn Tension Spring. Illus.	198
Clark's Patent Combined Door Stop and Bumper. Illustrated.	198
New Seamless Tube Rubber Hose. Illus.	198
Combination Plier and Wire Cutter. Illus.	199
The Novelty Pocket Screw Driver. Illus.	199
Cheyenne, the Chief City of Wyoming.	199
Current Hardware Prices.	200-205
Paints, Oils and Colors.	205
Current Metal Prices.	206

CURRENT HARDWARE PRICES.

JULY 30, 1890.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers' name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Adjusters, Blind.

Domestic.....	\$ per doz \$3.00, 23¢/doz
Excisor.....	\$ per doz \$1.00, .26¢/doz
Washburn's Self-Locking.....	.26¢/doz & 10%

Ammunition.

Caps, Percussion, No 1000—	
Hicks & Goldmark's and Union Metallic Cartridge Co., F. L. Waterproof, 1-10's.....	34¢/doz
E. B. Trimmed Edge, 1-10's.....	46¢/doz
E. B. Grad. Edge, Cent. Fire, 1-10's.....	46¢/doz
Musket Waterproof, 1-10's.....	.50¢
G. D. ....	.28¢
S. B. Genuine Imported.....	.45¢
Eley's E. B. ....	.54¢ @ .55¢
Eley's D. Waterproof, Central Fire.....	.46¢

Cartridges.

Rim Fire Cartridges.....	.50¢ & 2¢
Rim Fire Military.....	.25¢ & 2¢
Cent. Fire, Pistol and Rifle.....	.25¢ & 2¢
Cent. Fire, Military and Sporting	.15¢ & 2¢
Blank Cartridges, except 22 and 32 cal., additional 10% on above discounts	
Blank Cartridges, 22 cal., \$1.75.....	.25¢
Blank Cartridges, 32 cal., \$3.50.....	.25¢
Primed Shells and Bullets.....	.15¢ & 2¢
B. H. Caps, Round Ball, \$1.75.....	.25¢
B. B. Caps, Con. Ball, Swg'd., \$2.00.....	.25¢

Primers.

Berdan Primers, \$1.00.....	.25¢
B. L. Caps (for Sturtevant Shells) \$1.00.....	.25¢
All other Primers, \$1.20.....	.25¢

Shells.

First quality 4, 8, 10 and 12 gauge	25¢/doz & 2¢
First quality, 14, 16 and 20 gauge (\$1 list).....	.30¢/doz & 2¢

Prize Star, Club, Rival and Climax brands,	10¢/doz & 2¢
Seibold's Comb. Shot Shells.....	15¢/doz
I. X. L. 10 and 12 gauge.....	.40¢/doz & 2¢
"Special" 16 gauge.....	.30¢/doz & 2¢
"Special" 10 and 12 gauge.....	.40¢/doz & 2¢
Powder's Pat. ....	.25¢
Brass Shot Shells, 1st quality.....	.60¢/doz
Brass Shot Shells, Club, Rival, Climax.....	.60¢/doz

Shells Loaded.

Standard List, July 10, 1890. 40¢ & 10¢/doz	
Wade—Price per M.	

U. M. C. & W. R. A. — B. E., 11 up.....	.88¢
U. M. C. & W. R. A. — B. E., 9 & 10.....	.82¢
U. M. C. & W. R. A. — B. E., 8.....	.96¢
U. M. C. & W. R. A. — B. E., 7.....	\$1.10
U. M. C. & W. R. A. — P. E., 11 up.....	1.15
U. M. C. & W. R. A. — P. E., 9 & 10.....	1.50
U. M. C. & W. R. A. — P. E., 8.....	1.70
U. M. C. & W. R. A. — P. E., 7.....	1.80
Eley's B. E., 11 up.....	\$1.75
Eley's P. E., 11 up.....	2.80

Anvils.

Eagle Anvils, \$ per lb.....	15¢ @ 15¢/lb
Peter Wright's.....	10¢/lb
Armitage's Mouse Hole.....	.9¢
Armitage's Mouse Hole, Extra, 11½" x 11" x 10".....	.9¢/doz
Trenton.....	.9¢/doz
Wilkinson's.....	.9¢/doz
J. & Riley Carr, Pat. Pend.	11¢ @ 11¢/lb
Moore & Barnes Mfg. Co.	33¢/doz

Anvil Vise and Drill.

Millers Falls Co., \$15.00.....	.20¢
Cheney Anvil and Vise.....	.25¢
Allen Anvil and Vise, \$3.00.....	.40¢/doz & 2¢
Star.....	.45¢/doz

Apple Parers—See Parers, Apple.

Angers and Bits.

Douglas Mfg. Co.....	
Wm. A. Ives & Co.	
Humphreysville Mfg. Co.	
French, Swift & Co. (F. H. Beecher, P. S. & W. Co.)	70¢ @ 10¢/doz
Rockford Bit Company.....	
Cook's, Douglas Mfg. Co. ....	.55¢
Cook's, N. H. Copper Co. 50¢/doz @ 50¢/doz & 2¢	
Ives' Circular Lip.....	.60¢
Patent Solid Head.....	.30¢
C. E. Jennings & Co., No. 10, extension	.40¢
Hip.....	.40¢
C. E. Jennings & Co., No. 50.....	.65¢
C. E. Jennings & Co., Anger Bits, P set, 32¢/quarters, No. 5 & 6, No. 30, \$5.50, 20¢	
Lewis' Patent Single Twist.....	.45¢
Russell Jennings' Angers and Bits, 22¢/doz & 2¢	
Imitation Jennings' Bits.....	.60¢/doz & 2¢
Snell's Jennings Pattern.....	.60¢
Call.....	.40¢/doz & 2¢
Farm Bells.....	.7¢ @ 3¢/doz
Steel Alloy Church and School Bells, 40%	
Door—	
Gong, Abbe's.....	.25¢ & 10%
Gong, Yankee.....	.15¢ & 10%
Gong, Barton's.....	40¢/doz & 50%
Kentucky, "Star".....	.20¢/doz
Kentucky, Sargent's list.....	.20¢/doz
Dodge, Genuine Kentucky.....	.70¢/doz & 10%
Texas Star.....	.50¢/doz @ 50¢/doz & 2¢
Buffalo Ball.....	.11¢ @ 1.15¢
Barber's.....	.60¢
Nos. 10 to 16.....	.60¢
Nos. 30 to 32.....	.60¢
Nos. 40 to 63.....	.60¢/doz
Barker's, Nos. 8, 10 and 12.....	.75¢ & 10¢/doz
Barker's Imp. Plain.....	.75¢ & 10¢/doz
Barker's Imp. Nickelized.....	.65¢ & 10¢/doz
Ratchet.....	.75¢ & 10¢/doz
Globe Jawed.....	.60¢
Corner Brace.....	.40¢ & 10¢/doz
Universal, 8 in., \$2.10, 10 in., \$2.25	
Buffalo Ball.....	.11¢ @ 1.15¢
Barber's, Nos. 10 to 16.....	.60¢
Nos. 30 to 32.....	.60¢
Nos. 40 to 63.....	.60¢/doz
Barker's, Nos. 8, 10 and 12.....	.75¢ & 10¢/doz
Plated, Nos. 8, 10 and 12.....	.65¢ & 10¢/doz
Bartholomew's, Nos. 25, 27 and 30.....	.50¢ & 10¢/doz & 5%
Nos. 117, 118, 119.....	.70¢/doz & 10¢/doz
Common Ball, American.....	.51¢/doz @ 51¢/doz
Fray's Genuine Spofford's, .50¢ & 5¢/doz & 10%	
Fray's New Haven Novelty.....	.70¢/doz & 10¢/doz
New Haven Ratchet.....	.60¢ & 10¢/doz & 5%
Barber's Ratchet.....	.60¢ & 10¢/doz & 5%
Barbers.....	.60¢/doz
Spofford.....	.60¢ & 10¢/doz & 5%
Osgood's Ratchet.....	.40¢ & 10¢/doz
P. S. & W. Co., Peck's Patent.....	.60¢
Brackets—	
Shelf plain, Sargent's list, 55¢ & 10¢/doz	
Shelf fancy, Sargent's list, 60¢ & 10¢/doz	
Reading, plain.....	.50¢ & 10¢/doz & 5%
Reading, Rosette.....	.60¢ & 10¢/doz & 5%
Bright Wire Goods—See Wire.	
Brollers—	
Henis' Self-Inch.....	9 10 9x11
Basting, Per doz, \$4.50 5.50 6.50	
New Haven.....	.50¢

Bit Stock Drills.

Morse Twist Drills.....	.50¢ & 10¢/doz
Standard.....	.50¢ & 10¢/doz
Cleveland.....	.50¢ & 10¢/doz
Syracuse, for metal.....	.50¢ & 10¢/doz
Syracuse, for wood (wood list) 30¢ & 30¢/doz	
Williams' or Holt's, for metal, 50¢ & 10¢/doz	
Williams' or Holt's, for wood.....	.40¢/doz
Cincinnati, for wood.....	.30¢/doz
Cincinnati, for metal.....	.45¢/doz

Expansive Bits.

Clark's small, 11¢; large, \$26...35¢ & 35¢/doz	
Ives' No. 4, \$ per doz.....	.40¢
Swan's.....	.40¢
Steer's, No. 1, \$26, No. 2, \$35.....	.35¢
Bearns' No. 2, \$48.....	.20¢

Gimlet Bits.

Common.....	\$ gross \$2.75 @ \$3.25
Diamond.....	\$ per doz \$1.10...25¢ & 10%
Bee.....	.25¢ & 25¢/doz
Double Cut Shepardson's.....	.45¢ & 45¢/doz

Hand Brass.

Blacksmiths'.....	.60¢ & 65¢/doz
Molders'.....	.40¢ & 40¢/doz
Hand Bellows.....	.10¢/doz @ 50¢

Hand Heavy.

White Metal.....	.65¢ & 10¢/doz
Silver Chime.....	.33¢ & 10¢/doz
Globe Cone's Patent.....	.25¢ & 10¢/doz

Handy Brass.

Light Brass.....	.75¢ & 10¢/doz
Extra Heavy.....	.65¢ & 10¢/doz
White Metal.....	.60¢ & 10¢/doz
Silver Chime.....	.33¢ & 10¢/doz
Globe Cone's Patent.....	.25¢ & 10¢/doz

Handy Heavy.

Blacksmiths'.....	.60¢ & 65¢/doz
Molders'.....	.40¢ & 40¢/doz
Hand Bellows.....	.10¢/doz @ 50¢

Handy Metal.

Spirace, for metal.....	.50¢ & 10¢/doz
Spirace, for wood (wood list) 30¢ & 30¢/doz	
Williams' or Holt's, for metal, 50¢ & 10¢/doz	
Williams' or Holt's, for wood.....	.40¢/doz
Cincinnati, for wood.....	.30¢/doz
Cincinnati, for metal.....	.45¢/doz

Handy Metal.

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Chucks—	
Beach Pat.	each, \$8.00... 20%
Morse's Adjustable	each, \$7.00, 30@30@5%
Danbury	each, \$6.00, 30@30@5%
Syracuse	Bals Pat. 25%
Skinner's Patent Chucks	33@4%
Combination Lathe Chucks	33@4%
Universal Lathe Chucks	40%
Independent Lathe Chucks	40%
Drill Chucks	15%
Union Mfg. Co.	15%
Victor	\$8.50, 25%
Combination	40%
Universal	40%
Independent	40%
Churns.	
Tiffin Union No. 1, 5 gallon	.. \$3.25 each
Tiffin Union No. 2, 7 gallon	.. \$3.75 each
Tiffin Union No. 3, 10 gallon	.. \$4.25 each
Clamps—	
R. I. Tool Co.'s Wrought Iron	25%
Adjustable, Cincinnati	15@10%
Adjustable Hammers	15%
Adjustable, Stearn's	30@30@10%
Stearn's Adjustable Cabinet and Corner	30@30@10%
Cabinet, Sargent's	60@60@10%
Carriage Makers', Sargent's	21@10%
Carriage Makers', P. S. & W. Co.	40@10%
Eberhard Mfg. Co.	40@10@30@10@5%
Warner's	40@10@30@10@5%
Saw Clamps, see Vises, Saw Fliers	
Carpenters', Cincinnati	25@10%
Cleavers.	
Butchers'	
Bradley's	25@30%
L. & J. White	20@5%
Beatty's	40@40@5%
New Haven Edge Tool Co.'s	40%
P. S. & W.	33@33@33@40@40@5%
Brotter Bros.	30%
Schulte, Lohoff & Co.	40@40@5%
Clips—	
Norway, Axle, 1/4 & 5-16	55@55@5%
2nd Grade Norway Axle, 1/4 & 5-16	65@5%
Superior Axle Clips	60@5@270%
Norway Spring Bar Clips, 5-16	60@5@5%
Wrought-Iron Fellos Clips	W. B. 5%
Steel Fellos Clips	W. B. 5%
Baker Axle Clips	15%
Cloth and Netting, Wire—See	
Wire, &c.	50%
Cockeyes.	
Hardware list	50@2%
Coffee Mills—See Mills, Coffee.	
Collars, Dog, &c.	
Medford Fancy Goods Co.	40@10%
Embossed, Gilt, Pope & Steven's list	30@10%
Leather, Pope & Steven's list	40%
Brass, Pope & Steven's list	40%
Chapman Mfg. Company	50@10@60%
Combs, Curry.	
Pitch's	50@10@50@10@10%
Rubber, per doz \$10.00	20%
Perfect	50%
Compasses, Dividers, &c.—	
Compasses, Callipers, Dividers	70@70@10%
Bemis & Call Co.'s	
Dividers	60@5%
Compasses & Callipers	50@5%
Wing and Inside or Outside	50@5%
Double	60%
(Call's Pat. Inside)	80%
Excelsior	90%
J. Stevens & Co.'s	35@10%
Starrett's	
Spring Calipers and Dividers	25@10%
Lock Calipers and Dividers	25%
Combination Dividers	25%
Coopers' Tools—See Tools, Coopers'.	
Cord, Sash—	
Common	W. B. 10@11%
Patent, good quality	W. B. 13@13@14%
White Cotton Braided, fair	W. B. 28@25%
Common Russia Sash	W. B. 13@14%
Patent	W. B. 15%
Cable Laid Italian Sash	W. B. 22@23%
Indian Cable Laid	W. B. 13@
Silver Lake	
A Quality, White, 50¢	10@10@5%
A Quality, Drab, 55¢	10@10@5%
B Quality, White, 50¢	28@30%
B Quality, Drab, 55¢	31@33%
C Quality, White (only)	50@60@28%
Sylvan Spring, Extra Braided, White, 34¢	
Sylvan Spring, Extra Braided, Drab, 39¢	
Semper Idem, Braided, White, 30¢	
Egyptian, India Hemp, Braided	25¢
Sams—	
Braided, White Cotton, 50¢	30@30@5%
Braided, Drab Cotton, 55¢	30@30@5%
Braided, Italian Hemp, 55¢	30@30@5%
Braided, Linen, 80¢	30@30@5%
Corkscrews—See Screws, Cork.	
Corn Knives and Cutters—See	
Knives, Corn.	
Crackers, Nut—	
Table (H. & B. Mfg. Co.)	40%
Blake's Pattern	W. B. \$2.00, 10%
Turon & Seymour Mfg. Co.	50%
Cradles—	
Grain	50@5@2@50@10@2%
Crayons.	
White Crayons, W. gr. 12@12@4¢	10%
D. M. Stewart Mfg. Co., Metal Work-	ers
gr. 25¢	25¢
M. Stewart Mfg. Co., Rolling Mill	W. gr. \$2.50
See also Chalk.	25¢
Crow Bars—See Bars, Crow.	
Curry Combs—See Combs, Curry.	
Curtain Pins—See Pins, Curtain.	
Cutters—	
Meat.	
Dixon's F. dos.	40@25@
Nos. 1	2 3 4
\$14.00	\$17.00 \$19.00
Woodruff's F. dos	40@25@
Nos.	100 150
\$15.00	\$18.00
Hales Pattern F. dos.	70@70@25@
Nos.	11 12 13
\$27.00	\$33.00 \$45.00
American	30@
Nos. 1 2 3 4	B 6
\$5.00	\$10.00 \$25.00
Enterprise	30@
Nos. 10 12 22 32 42	
\$3.00	\$2.50 \$4.00
Great American Meat Cutter	30@
Nos. 112 116 118	120 122
\$2.00	\$2.75 \$3.00 \$2.50 \$4.00
Miles' Challenge F. dos.	45@45@10@
Nos. 1 2 3	
\$22.00	\$30.00 \$40.00
Home No. 1	W. B. \$26.00, 55@10@
Draw Cut, each:	
Nos. 5 7 8	
\$5.00	\$7.00 \$9.00
W. B. 20@10@60%	
Wood Bottom	W. B. \$5.00@15.25
All Iron	W. B. \$2.00
Joshua Lock Co. T. F. dos.	\$18.00 50@55@
Wilson's	50@55@
Sargent's	W. B. \$24. 55@10%
Acme	W. B. \$20.00 40@
Werner	W. B. 20@10@40@
Smith's Pat.	W. B. \$12.00, 20@10@10@
W. B. \$10.00, 33@4@	
Penny's Ads. Pol. \$14; Jap'd, \$16.00, 55%	
Appleton's	W. B. \$16.00, 60@10@
Bonney's	W. B. 30@10@
Cincinnati	25@10@
Cutlery—	
Beaver Falls & Booth's	33@
Wostenholme	67.75 to 2
Dampers, &c.—	
Dampers, Buffalo	40@10%
Buffalo Damp'r Clips	40@10%
Crown Damper	40%
Excelsior	40@10%
Diggers, Post Hole, &c.—	
Sanson Post Hole Digger	W. B. \$36.00,
Fletcher Post Hole Augers	W. B. \$36. 20@10%
Erika Diggers	W. B. \$16.00@17.00
Leed's	W. B. \$36.00@17.00
Vaughan's Post Hole Auger	W. B. \$13.00@14.00
Kohler's Little Giant	W. B. \$18.00
Kohler's Hercules	W. B. \$15.00
Kohler's New Champion	W. B. \$9.00
Schneidler	W. B. \$18.00
Ryan's Post Hole Diggers	W. B. \$24.00
Cronk's Post Bars	W. B. \$40.00,
Gibbs Post Hole Digger	W. B. \$20.00, 50@
Imperial	W. B. \$15.00
Dividers—	
See Compasses.	
Dog Collars—See Collars, Dog, &c.	
Door Springs—See Springs, Door.	
Drawers.	
Money, W. B. dos.	\$18@\$20
Drawing Knives—See Knives, Drawing.	
Drills and Drill Stocks—	
Blacksmiths'	each \$1.75
Blacksmiths' Self-Feeding	each \$7.50@20@
Breast, P. S. & W.	40@10@20@
Wilson's	40@10@20@
Breast, Miller's Falls	each \$3.00, 25@
Breast, Bartholomew's	each \$2.50, 25@10@
Ratchet, Merrill's	20@20@5%
Ratchet, Ingolsoll's	25%
Ratchet, Parker's	20@20@5%
Ratchet, Whitney's	20@10@5%
Ratchet, Weston's	20@25%
Ratchet, Moore's Triple Action	25@30%
Ratchet, Curtis & Curtis	30%
Whitney's Hand Drill, Plain, \$11.00;	20@10@
Adjustable, \$12.00	
Wilson's Drill Stocks	10%
Automatic Boring Tools	\$1.75@\$1.85
Twist Drills—	
Morse	50@10@5%
Standard	50@11@5%
Syracuse (Metal list)	50@10@5%
Cleveland	50@10@5%
Williams	50@10@10@
Williams	50@10@10@
New Process	50@10@5%
Drill Bits.—See Augers and Bits.	
Drill Chucks.—See Chucks.	
Dripping Pans—See Pans, Dripping.	
Drivers, Screw.	
Douglas Mfg. Co.	30@20@10%
Diss'ons	10%
Buck Bros.	30%
Stanley R. & L. Co.'s	50@10@5%
Varnished Handles	60@10@5%
Black Handies	60@10@5%
Sargent & Co.'s	60@10@5%
No. 1 Forged Blade	60@10@10@
Nos. 20, 30 and 40	60@10@20@
P. S. & W.	70% 75%
Knapp & Cowles No. 1	60@20@20@
No. 1 Extra	60@60@10@
Nos. 00 & 4	50@25@M@60@55@
Stearns'	25@10@55@
Gay & Parsons	35@
Clark's Pat.	30@33@5
Crawford's Adjustable	30@
Erlrich's Socket and Ratchet	25@5@2@0%
Allard's Spiral, New list	25%
Kohl's Common Sense	Wdos \$6.00, 25@10@
Syracuse Screw-Driver Bits	30@30@5%
Screw-Driver Bits	W. B. \$6.00@75@
Screw-Driver Bits, Parr's.	
Parr's Hol. Hdin. Sets. No. 3	W. gro \$6.25
	25@25@10%
P. D. & Co.'s all Steel	50%
Cincinnati	25@10%
Brace Screw Drivers	25@10%
Buck Bros.' Screw-Driver Bits	25@10%
Egg Beaters.—See Beaters, Egg.	
Egg Poachers.—See Poachers, Egg.	
Electric Bell Sets.—See Bells, Electric.	
Emery.	
Emery. — No. 4 to No. 54 to Flour, CF	CF
40 gr.	150 gr.
Kegs, W. B.	F. FF.
45 kegs, W. B.	50@ 21@5
50 kegs, W. B.	50@ 21@5
10 B. cans, 10	in case, 6 @ 6@
10 B. cans, less	than 10, 10 @ 10 @
	75@
Framed and Tinned Ware—	
See Ware, Hollow.	
Escutcheons.	
Door Lock	Same dis as Door Locks.
Brass Thread	60@60@10%
Wood	25@
Expanded Metal.	
List No. 5.	
Lathing	10%
Fencing, Painted Sheets	20%
Netting, Painted Sheets	20%
Door Mats, Galvanized	25%
Window Guards, Panelled	15%
Tree Guards, Panelled	15%
Fasteners, Blind—	
Mackrell's, W. B. dos.	\$1.00... 20@20@10%
Van Sand's Screw Pat.	\$15 W. gr. 60@60@10%
Van Sand's Old Pat.	\$15 W. gr. 55@55@10%
Washburn's Old Pattern	W. gr. 30@30@10%
Merriman's	new list
Austin & Eddy No. 2008 W. gr.	\$9.00
Austin & Eddy No. 2009 W. gr.	\$9.00
Faucets.—	
Fenn's	40@10@5%
Boehren's Pat. Rubber Ball	25%
Fran's Cork Stoppers	33@5
Star	60@
Frary's Pat. Petroleum	40@5@25@
B. & L. B. Co.	
West's Lock, Open and Shut Key	50%
Star, Metal Plug, new list	40%
Lockport, Metal Plug, reduced list	30%
Metallic Key, Leather Lined	60@10@5%
John Sommers'	
Peerless Best Block Tin Key	40%
IXL, 1st quality, Cork Lined	50%
Diamond Lock	40%
Perfection, Fla. Red Cedar	50%
Goodenough Cedar	50%
Boss Metallic Key	50%
Reliable Cork Lined	60@
Western Pattern Cork Lined	50%
Self-Measuring.	
Enterprise	W. B. \$50.00... 20@10@10%
Lane's	W. B. \$36.00... 25@10@5%
Victor	W. B. \$36.00... 25@10@5%
Fanlets.—	
Fenn's	40@10@5%
Boehren's	40@10@5%
Fran's	33@5
Star	60@
Frary's Pat. Petroleum	40@5@25@
Fanlights—	
Le Page's Liquid	25@25@5%
Upton's Liquid	35@
Le Page & Co.'s Improved Process	25@25@5%
Fanlights, Glue.	
Glue	
Le Page	25@25@5%
Upton	25@25@5%
Le Page & Co.	25@25@5%
Glue Pots—See Pots, Glue.	
Grease, Axle.	
Fraser's	Keg W. B. 4@, Pall W. B. 5@
Fraser's, in boxes	W. gr. \$9.50
Dixon's Everlasting	in bxs. W. B. \$1.20... 2@ \$2.00
Dixon's Everlasting	10@ pairs, ea. 35¢
Lower grades, special brands	W. gr. \$5.00@ \$7.00
Grindstones—	
Small, at factory	.. 1 ton \$7.50@ \$0.00
Grindstone Fixtures—See Fixtures.	
Grindstone	
Hack Saws—See Saws.	
Hats, Awl.	
Sewing, Brass Fer. W. gr.	28.50... 45@10%
Pat. Sewing, Short	\$1.00 W. gr.
Pat. Sewing, Long	W. gr. \$1.20
Pat. Peg, Plain Top	W. gr. \$10.00... 45@10%
Pat. Peg, Leather Top	W. gr. \$12.00... 45@10%
Halters.	
Covert's, Rope	1/2-in. Jute
Covert's, Rope	1/4-in. Hemp
Covert's Adj. Rope Halters	40@2%
Covert's Hemp Horse and Cattle Tie	50@2%
Covert's Jute Horse and Cattle Tie	60@10@2%
Covert's Adj. Web Halters	35@2%
Hammers—	
Handled Hammers—	
Maydole's, list Dec. 1, '85	25@10@25@5%
Buffalo Hammer Co.	
Humason & Beckley	
Atha Tool Co.	
Fayette R. Plumb	50@50@10%
C. Hammond & Son	
Hartford Hammer Co.	
Verree	
Magnetic Tack, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9	1.25, 1.50, 1.75...
Nelson Tool Works	40@2%
Warner & Nobles	20@25%
Peck, Stow & Wilcox	40%
Sargent's	33@2@10%
Heavy Hammers and Sledges—	
3 2 and under	W. B. 40@
3 to 5 2	W. B. 35@
Over 5 2	W. B. 30@
Wilkinson's Smiths	10@ 11@ 12@
Handcuffs and Leg Irons—See	
Policie Goods	
Handlers—	
Cross-Cut Saw Handles—	
Atkins' No. 1 Loop	

Roggan's Latches	W. dos \$0.25
Bronze Iron Drop Latches	W. dos \$0.75 net
Jap'd Store Door Handles	Nuts, \$1.62;
Plate, \$1.10; no Plate, \$0.82	net
Barrel Door	W. dos \$1.40.
Chest and Lifting	10x10
Wood—	
Saw and Plane	.40x10x40x10x35
Hammer, Hatchet, Axe, Sledge, &c.	.10x
Brad Awl	W. gr \$0.00
Hickory Firmer Chisel, ass'd. W. gr .50	
Hickory Firmer Chisel, large	W. gr .50
Apple Firmer Chisel, ass'd.	W. gr .50
Apple Firmer Chisel, large	W. gr .60
Socket Firmer Chisel, ass'd.	W. gr .60
Socket Framing Chisel, ass'd.	W. gr .60
J. S. Smith & Co.'s Pat File	.50
File, ass'd, pointed	W. gr .75
Auger, ass'd	W. gr .50
Auger, large	W. gr .70
Pat. Auger, Iron	.20x10
Pat. Auger, Douglass	W. set \$1.21
Pat. Auger, Swan's	W. set \$1.00
Hoe, Rake, Shovel, &c.	.50x10%
Hangers—	
Barn Door, old patterns	.80x10x10x70
Barn Door, New England	.80x10x10x70
Samson Steel Anti-Friction	.55x
Orleans Steel	.55x
Hamilton Wrought Wood Track	.55x
U. S. Wood Track	.65x
Champion	.60x10x5
Rider and Wooster, Medina Mfg. Co.'s list	.70x
Climax Anti-Friction	.60x
Zenith Anti-Friction for Wood Track	.55x
Reed's Steel Arm	.50x
Challenge, Barn Door	.50x
Sterling's Imp'ved (Anti-Friction)	.65x10x
Victor, No. 1, \$15.00; No. 2, \$16.50; No. 3, \$18.00.	
Cheshire	.50x10x5
Kiddier's	.50x10x5
The Boss	.60x10x60
Best Anti-Friction	.60x10
Duplex (Wood Track)	.60x10x5
W. F. F., W. dos pr. 4 in, \$10.00; 5 in, \$12.00.	
Terry's Steel Anti-Friction Under	.50x10
Terry's Steel Anti-Friction Ideal	.50x10
Cronk's Patent, Steel Covered	.50x5
Wood Track Iron Clad, W. ft, 10x10	.50
Carrier Steel Anti-Friction	.50x50x5
Architect, W. set \$6.00	
Eclipse	.20x10x5
Felix, W. set \$4.50	
Richards'	.20x
Lane's Standard	.50x5/2x50x10
Lane's New Standard	.50x5/2x5
Ball Bearing Door Hanger	.20x10x25x10
Warner's Pat.	.20x10/20x10/20x10
Stearns' Anti-Friction	.20x10/20x10/20x10
Stearns' Challenge	.20x10/25x10/20x10
Faultless	.40x40x5
American, W. set \$6.00	
Rider & Wooster, No. 1, 62x4; No. 2, 75x	
Paragon, Nos. 1, 2 and 3	.40x10x5
Paragon, Nos. 5, 5x, 7 and 8	.20x10x5
Crescent	.60x60x10x5
Nickel Cast Iron	.50x
Nickel Malleable Iron and Steel	.40x
Scranton Anti-Friction Single Strap	.55x
West, West, 4 in. Wheel, \$15.00; 5 in. Wheel, \$21.00.	
Star	.40x10x40x10x5
May	.50x5/50x10x5
Barry, \$6.00.	.40x10x5
Harness Snaps—See Snaps.	
Hatchets—	
American Axe and Tool Co.	
Blood's	
Hunt's	
Hurd's	
Mann's	
Peck's	
Underhill's	
Buffalo Hammer Co.	40 & 10 @ 50x5 x
Fayette R. Plumb.	
C. Hammond & Son.	
Kelly's	
Sargent & Co.	
P. S. & W. Co.	
Ten Eyck Edge Tool Co.	
Collins	10%
Schulte, Lohoff & Co.	.50x50x5x5
Hay and Straw Knives—See Knives.	
Hinges—	
Blind Hinges—	
Parker	.75x2x
Palmer	.50x5x10
Seymour	.70x2x
Nicholson	.45x10
Huffer	.50x
Clark's, Nos. 1, 3, 5, 40 and 50	
Clark's Mortise Gravity	.50x
Sargent's, No. 12	.77x10x10x5
Reading's Gravity	.75x10x75x10x5
Shepard's	
Noiseless	.75x10x
Niagara	.50x
Buffalo	.50x
Clark's Genuine Pattern	.50x
O. S., Lull & Porter	.50x
Acme, Lull & Porter	.75x10x
Queen City Reversible	.70x10x50x75
Clark's Lull & Porter, Nos. 1, 11, 2, 24, 3	.75x10x50x45
North's Automatic Blind Pictures, No. 2, for Wood, \$9.00; No. 3, for Brick, \$11.50.	
Gate Hinges—	
Western	W. dos \$4.40, 60x
N. E.	W. dos \$7.00, 55x
N. E. Reversible	W. dos \$5.20, 55x10x
U. S., Nos. 1, 2, 3	.60x10x5x5
N. Y. State	W. dos \$5.00, 55x10x5
Automatic	W. dos \$4.20, 50x
Common Sense	W. dos pair \$4.20, 50x
Seymour's	.45x10x
Shepard's	.60x10x5x5
Reed's Latch and Hinges	W. dos \$12.00,
Spring Hinges—	.50x
Geer's Spring and Blank Butts	.40x
Union Spring Hinge Co.'s list, March	.50x
886	
Irons.	
Sad	
From 4 to 10, at factory	W. 100 ft.
Self-Heating	W. dos \$9.00 net
Self-Heating Tailors'	W. dos \$18.00 net
Mrs. Pott's Irons	40x6x4x10x5
Enterprise Star Irons	40x6x4x10x5
Cold Handle Sad Irons	40x10x4x10x5
Wolenska's	
Class 3 and 4, Bronzed Iron	.50x
Class 3 and 4, Bronze Metal	.25x
Skylight Lifters	.25x
Crown, Eagle and Shield	.50x
Belcher's, list Aug. 1, 1880	
Bronzed Iron Rods	.50x10x4x10x5
Brass, Real Bronze or Nickel Plate	.30x
Domestic Fluter, White Metal	.15x
Crown Hand Fluter, No. 1, \$15.00—	
Shepard Hand Fluter, No. 85	W. dos
15x30, \$10.00	
15x30	
Excelsior	
Shaw's	.50x10x5
Pawson's Universal	.40x4x10x5
Lines—	
Cotton and Linen Fish, Draper's	.50x
Draper's Chalk	.50x
Draper's Mason's Linen, 84 ft., No. 1	
No. 2, \$1.75; No. 3, \$2.25; No. 4	
No. 5, \$3.25	
Cotton Chalk	.50x
Samson, Cotton, No. 4, \$2; No. 4x, \$2.50	
Silver Lake, Braided, No. 8, \$6.00; No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50	
Mason's Linen, No. 3x, \$1.50; No. 4, \$2.00; No. 4x, \$2.50	
Mason's Colored Cotton	.45x
Wire Clothes, Nos. 12, 19, 20	\$4.00 \$3.50 \$3.00
Ventilator Cord, Samson Braided, White or Drab Cotton	W. dos \$7.50, 20x
Locks, &c.—	
Cabinet—	
Eagle, Gaylord Par ker and Corbin	List March, '84, rev
Deits, Nos. 36 to 39	
Deits, Nos. 51 to 60	
Deits, Nos. 86 to 90	
Stoddard Lock Co.	.30x3x5
"Champion" Night Latches	
Eagles Mfg. Co.	40x4x10x5
Eagle and Corbin Trunk	.25x10x5
"Champion" Cab. and Combi	.33x10x5
Yale	not price
Romer's	
Door Locks, Latches, &c.	
E. & M. F. Co., List Mar. 20, 1889	60x10x5
Mallory, Wheeler & Co., list July, '88	10x10x10
Sargent & Co., List Aug. 1, '88	lower net
Reading Hardware Co., list Feb. 2, '88	prices often made
Brittan, Graham & Mathes, list Jan. 1890	15x10x10
Perkins' Burglar Proof Plate	60x25x10
Barnes Mfg. Co.	.33x10x5
Deits Flat Key	.50x
L. & C. Round Key Latches	.30x10x5
C. & C. Flat Key Latches	.35x10x5
Romer's Night Latches	.15x10x5
Shephard's U. S. Seed N. Y. Hasp Lock	.50x
Paddocks	
Lightning, Mrs. price W. dos \$18.00, 25x	15x10x10
But jobbers cut this price freely, often selling at \$8 @ \$8.50.	
Wadsworth's	.40x7x14x4x40x10x5
Carter's Needle	W. dos \$11.00 @ \$11.50
Heath's	W. dos \$13.00 @ \$13.50
Auburn Hay, Corn, and Spear Point	.50x
Auburn, Straw	.40x
Nolin's Hay	W. dos \$8.00 @ \$8.00
Mincing	
Am. (2d quality) W. gr. 1 blade, \$7; 2 blades, \$12; 3 blades, \$18.	.50x
Lothrop's	.50x2x10x5
Smith's, W. dos, Single, \$2.00; Double, \$3	.40x4x5x
Knapp & Cowles	.50x10x4x5
Rufus Adjustable	W. dos \$3.00 .25x
Buffalo Double Adj'table	W. dos \$8.00 .25x
Knobs—	
Door Mineral	.60x6x5x
Door Por. Jap'd	.70x2x5x
Door Por. Nickel	12x6x2.25
Door Por. Plated Nickel	12x6x2.25
Drawer, Porcelain	.00x10x4x6x10x10x5
Hemacite Door Knobs	.40x10x50x
Yale & Towne Wood	List Dec. 1885, .40x
Furniture Plain	.75x gro. inch 10x
Furniture, Wood Screws	.25x10x5
Base, Rubber Tip	.70x8x10.5x
Picture, Judd's	.60x10x10x70x
Picture, Sargent's	.70x10x5
Picture, Hemacite	.35x5x5
Shutter, Porcelain	.65x10x5
Carriage, Jap.	W. gro \$6. 60x10x5
Bardsey's Wood Door, Shutter, &c.	.40x
Universal	.50x
Kempshall's Gravity	.50x
Kempshall's Model	.60x6x10x5
Corbin's Daisy, list Feb. 15, 1886	.70x
Common's Perfect	.10x10x5
Hammond's Window Springs	.40x
Br'zed	.50x
Reading	.65x10x10x5
Hammond's Window Springs	.40x
Common Sense, Nickel Plated	.50x
Universal	.50x
Br'zed	.50x
Security	.70x
Lumber Tools—See Tools, Lumber	
Lustre—	
Four-ounce Bottles	W. dos, \$1.75; \$ gross
	.50x10x5
Machines.	
Boring—	
Without Augers	Upright, Angular.
Augers	45.50 \$6.75 .50x
Deits, K. C. Pat.	5.50 6.75 .00x10x10
Deits	5.50 6.75 .45x4x5x1
Other Machines	2.25 2.75 .00x
Phillips' Patent with Angles	7.00 7.50 .00x
Fluting	
Knox, 4x-in. Rolls	\$3.25 each .50x
Knox, 6-inch Rolls	\$5.00 each .50x
Eagle, 3x4-inch Rolls	\$2.15 .50x
Eagle, 5x6-inch Rolls	\$2.85 .50x
Crown, 4x5, \$3.50; 6 in, \$4.00; 8 in, \$5.00 each	.50x
Crown, 6x6, 6 in, \$3.50; 8 in, \$4.00; 10 in, \$4.50 each	.50x
American, 5 in, \$3.00; 6 in, \$3.40; 7 in, \$3.50 each	.50x
Domestic Fluter	\$1.50
Geneva Hand Fluter, White Metal	\$1.50
Crown Hand Fluter, No. 1, \$15.00—	
12x3.50, \$1.50	
Shepard Hand Fluter, No. 85	W. dos
15x30, \$1.50	

Shepard Hand Fluter, No. 110		W dos \$1.00.
Shepard Hand Fluter, No. 95		W dos \$5.00.
Clark's Hand Fluter, W		dos \$15.00.
Combined Fluter and Set Box		dos \$15.00.
Buffalo		dos \$10.00.
<i>Holding—</i>		
Moore's Hand Hold, with Lock		Brake.
Moore's Differential Pulley Block		40%.
Moore's Mfg. Co.		25%.
<i>Mallets.</i>		
Hickory		30¢ to 10¢ to 20¢ to 10¢ to 10¢.
Lignumvitae		30¢ to 10¢ to 20¢ to 10¢ to 10¢.
R. & L. Block Co., Hickory & L. V.		
Mattocks. Regular list		60¢ to 10¢.
<i>Measures.</i>		
Standard Fiberglass, No. 1, peck, W dozen, \$4—peck, \$8.50.		
<i>Meat Cutters.</i> —See Cutters, Meat.		
<i>Mills.</i>		
Coffee—		
Box and Side, List Jan. 1, 1888.		60¢ to 2¢.
American, Enterprise Mfg. Co.		20¢ to 10¢ to 5¢.
The Swift, Lane Bros.		30¢ to 10¢.
<i>Mincing Knives.</i> —See Knives, Mincing.		
<i>Molas Gates.</i> —See Gates, Molasses.		
<i>Money Drawers.</i> —See Drawers, Money.		
<i>Mowers, Lawn.</i>		
Leading makers.		60¢ to 40¢ to 5¢.
Other makers.		60¢ to 10¢ to 5¢ to 6¢ to 10¢.
Pennsylvania.		6¢.
Continental.		6¢.
New Model.		60¢ to 10¢ to 5¢.
New Quaker City.		60¢ to 10¢ to 5¢.
Great American.		60¢ to 10¢ to 5¢.
<i>Muzzles.</i>		
Safety.		W dos, \$3.00, 25¢.
<i>Nails.</i>		
Cut and Wire. See Trade Report.		
Wire Nails, Papered.		
Association list, July 15, '89. 75¢ to 75¢ to 5¢.		
Tack Mfrs.' list.		60¢ to 10¢ to 10¢.
Wire Nails, Standard Penny.		
Card June 1, '89, base.		\$2.50 to \$2.00.
<i>Horse.</i>		
Nos. 6 7 8 9 10		
Ausable.		25¢ to 25¢ to 25¢ to 25¢.
Clinton, Fin.		11¢.
Essex		25¢ to 25¢ to 25¢ to 25¢.
Lyra		25¢ to 25¢ to 25¢ to 25¢.
Snowden		25¢ to 25¢ to 25¢ to 25¢.
Putnam.		25¢ to 25¢ to 25¢ to 25¢.
Globe.		25¢ to 25¢ to 25¢ to 25¢.
Boston.		25¢ to 25¢ to 25¢ to 25¢.
A. C.		25¢ to 25¢ to 25¢ to 25¢.
C. B.-K.		25¢ to 25¢ to 25¢ to 25¢.
Champlain		25¢ to 25¢ to 25¢ to 25¢.
New Haven.		25¢ to 25¢ to 25¢ to 25¢.
Saranac.		25¢ to 25¢ to 25¢ to 25¢.
Champion.		25¢ to 25¢ to 25¢ to 25¢.
Capewell.		25¢ to 25¢ to 25¢ to 25¢.
Star.		25¢ to 25¢ to 25¢ to 25¢.
Anchor.		25¢ to 25¢ to 25¢ to 25¢.
Western.		25¢ to 25¢ to 25¢ to 25¢.
Empire Bronzed.		14¢ to 2¢.
<i>Picture.</i>		
Brass Head, Sargent's list.		50¢ to 10¢ to 10¢.
Brass Head, Combination list.		50¢ to 10¢.
Porcelain Head, Sargent's list.		50¢ to 10¢ to 10¢.
Porcelain Head, Combination list.		40¢ to 10¢ to 10¢.
Niles' Patent.		40¢.
<i>Nuts.</i>		
Nuts, off list Dec. 18, 1889: Square, Hex, Hot Pressed.		5.5¢ to 6.10¢.
Cold Punched.		5.10¢.
In lots less than 100 lbs, W dos, add 3¢; 1-lb boxes, add 1¢ to list.		5.00¢.
<i>Oakum.</i>		
Government.		W dos 7¢ to 1¢.
U. S. Navy.		W dos 6¢ to 1¢.
Navy.		W dos 5¢ to 5¢ to 1¢.
<i>Oilers.</i>		
Zinc and Tin.		.05¢ to .05¢ to 10¢.
Brass and Copper.		.50¢ to 10¢ to 5¢ to 10¢.
Malleable, Hammers' Improved, No. 1, \$3.60; No. 2, \$4.40; No. 3, \$4.40		W dos.
Malleable, Hammers, Old Pattern, same list.		10¢ to 10¢ to 5¢.
Prior's Pat. or "Paragon" Zinc.		40¢.
Prior's Pat. or "Paragon" Brass.		60¢ to 10¢ to 10¢.
Oimstead's Tin and Zinc.		60¢.
Broughton's Zinc.		50¢.
Broughton's Brass.		50¢.
Gen. P. D. & Co.		W gro. \$2.
Steel, Draper and Williams.		50¢.
<i>Openers, Can.</i>		
Messenger's Comet.		W dos \$3.00, 25¢.
American.		W gross \$3.00.
Duplex.		dos 25¢, 15¢ to 20¢.
Lyman's.		W dos \$3.75, 20¢.
No. 4 French.		W dos \$2.25, 55¢ to 60¢.
No. 5, Iron Handle.		W gro. \$2.00, 45¢ to 50¢.
Eureka.		W dos \$2.50, 10¢.
Sardine Scissors.		W dos 12¢ to 50¢.
Star.		W dos \$2.75, 20¢.
Sprague, No. 1, \$2.00, 2, \$2.25, 3, \$2.50.		50¢ to 10¢ to 10¢.
Excelsior, No. 1, \$2.50; No. 2, \$1.50, \$1.00.		
<i>Plates.</i>		
World's Best, W gross, No. 1, \$12.00—No. 2, \$24.00—No. 3, \$30.00.		50¢ to 10¢.
Universal.		W dos \$2.50.
Domestic.		W dos \$2.50.
Champion		W dos \$2.00.
<i>Pudding, Steam.</i>		
Standard.		60¢ to 5¢ to 65¢.
Extra.		50¢ to 60¢ to 55¢.
N. Y. B. & P. Co., Standard.		40¢ to 10¢ to 5¢.
N. Y. B. & P. Co., Empire.		60¢ to 5¢ to 65¢.
N. Y. B. & P. Co., Salamander.		W dos 65¢, 10¢ to 15¢.
Jenkins' Standard.		W dos 5¢ to 25¢ to 25¢.
<i>Miscellaneous.</i>		
American Packing.		10¢ to 11¢ W dos.
Italian Packing.		14¢ W dos.
Cotton Packing.		15¢ to 17¢ W dos.
Jute.		7¢ to 8¢ W dos.
<i>Padlocks.</i> —See Locks.		
<i>Pails.</i>		
Galvanized Iron.		Quarts 10 12 14.
Hill's Light Weight.		W dos \$2.75 8.00 3.25.
Hill's Heavy Weight.		W dos 3.00 3.25 3.75.
Whiting's.		2.75 3.00 3.25.
Sidney Shepard & Co.		2.55 2.85 3.05.
Iron Clad.		2.50 2.75 3.00.
Fire Buckets.		2.75 3.25 3.50.
Buckets, see Well Buckets.		
Induced Fibre Ware.		25¢.
Star Pails, 12 qt.		W dos \$6.00.
Fire, Stable and Milk, 14 qt.		W dos \$7.80.
Standard Fibre Ware.		
Water Pails, 12 qt., per dos.		\$4.00 4.50.
Dairy Pails, 14 qt., per dos.		4.50 5.00.
Fire Pails, No. 1, 12 qt., per dos.		4.50.
Fire Pails, No. 2, 14 qt., per dos.		5.00.
Sugar Pails.		6.00 6.50.
Horse Pails.		5.00.
Buggy Pails.		4.00.
Stop Jars (bal. trap).		8.00 9.00.
Chamber Pails, 14 qt.		6.50 7.50.
<i>Pans.</i>		
Dripping.		
Small sizes.		W dos 61¢ to 65¢.
Large sizes.		W dos 5¢ to 55¢.
<i>Pails.</i>		
Standard List:		
No. 0 1 2 3 4		
\$ dos .38.00 .35.75 .34.25 .31.75 .26.25		
No. 5 6 7 8		
\$ dos .46.00 .37.00 .35.00 .30.00 .26.00		
Polished, regular goods.		70¢ to 10¢.
Acme Fry Pans.		60¢ to 10¢.
<i>Pans.</i>		
Sand and Emery.		
List April 19, 1886.		50¢ to 50¢ to 10¢.
Sibley's Emery and Crocus Cloth.		30¢.
<i>Parers.</i>		
Apple.		
Advance.		W dos \$4.75.
Baldwin.		W dos 3.25.
Bonanza.		W dos 3.00 to 5.00.
Champion.		W dos 2.25.
Daley.		W dos 4.00.
Eureka.		W dos 7.50.
Family Bay State.		each 16.00.
Monarch.		W dos 12.00.
Favorite.		W dos 5.00.
Gem.		W dos 5.25.
Gold Medal.		W dos 4.00.
Ideal.		W dos 4.00.
Improved Bay State.		W dos 27.00 to 30.00.
Little Star.		W dos 4.50.
Monarch.		W dos 13.50.
New Lightning.		W dos 5.50.
Oriole.		W dos 4.00.
Pann.		W dos 4.00.
Perfection.		W dos 4.00.
Pomona.		W dos 4.00.
Rocking Table.		W dos 6.00.
Turntable.		W dos 4.50.
Victor.		W dos 13.50.
Waverly.		W dos 4.00.
White Mountain.		W dos 4.00.
72.		W dos 4.25.
76.		W dos 5.75.
78.		W dos 6.50.
<i>Potato.</i>		
White Mountain.		W dos \$4.50.
Antrim Combination.		W dos \$5.50.
Hoosier.		W dos \$12.50.
Satrata.		W dos \$5.00.
<i>Pencils.</i>		
Faber's Carpenters'.		high list 50¢.
Faber's Bound Gilt.		W gro. \$5.25.
Dixon's Lead.		W gro. \$4.50.
Dixon's Lumber.		W gro. \$6.75.
Dixon's Carpenters'.		40¢ to 10¢.
<i>Picks.</i>		
Railroad or Adz Eye, 5 to 6.		\$12.00.
6 to 7.		\$13.00.
<i>Picture Nails.</i> —See Nails, Picture.		
<i>Pinking Irons.</i> —See Irons, Pinking.		
<i>Pins.</i>		
Bow.		
Humason, Beckley & Co.'s.		60¢ to 10¢.
Sargent & Co.'s.		.117 and \$18.
Peck, Stow & W. Co.		50¢ to 10¢ to 50¢ to 10¢.
Curtain.		
Silvered Glass.		net.
White Enamel.		net.
Escutcheon.		net.
Iron, list Nov. 11, 1885.		.50¢ to 10¢ to 50¢ to 10¢.
Brass.		.60¢ to 60¢ to 55¢.
<i>Pipe, Wrought Iron.</i>		
List September 18, 1880.		
14 and under, Plain.		47¢ to 5¢.
14 and over, Galvanized.		40¢.
and over, Galvanized.		60¢.
Bell Tubes, Iron.		47¢ to 5¢.
14¢ and under.		45¢.
9 to 4 inch.		50¢.
4-inch and larger.		52¢ to 65¢.
<i>Planes and Plane Irons.</i>		
Wood Planes.		
Molding.		10¢ to 12¢.
First Quality.		55¢ to 55¢.
Second Quality.		50¢ to 55¢.
Bailey's (Stanley R. & L. Co.).		40¢ to 10¢.
<i>Pins.</i>		
Curtsie Hammer.		W dos \$15.00, 10¢.
Giant, No. 1.		W dos \$15.00, 10¢.
Giant, No. 2.		W dos \$10.00, 10¢.
Pelican.		W dos \$10.00, 25¢.
<i>Pulleys.</i>		
Hot House, Awning, &c.		60¢ to 10¢.
Japanned Screw.		60¢ to 10¢.
Japanned Side.		60¢ to 10¢.
Japanned Clothes Line.		60¢ to 10¢.
Empire Sash Pulley.		55¢ to 60¢.
Moore's Sash, Anti-Friction.		50¢.
Hay Fork, Solid Eye.		Swivel, \$4.50.
Hay Fork.		50¢ to 10¢ to 50¢ to 10¢.
Hay Fork, "Anti-Friction," 5 in.		Solid, \$5.70.
Ray Fork.		"Common and Pat.
Bushed.		20¢.
Hay Fork, Tarbox Pat. Iron.		20¢.
Hay Fork, Reed's Self-Lubricating.		.00¢.
Shock Rack.		45¢.
Tackle Blocks.		See Blocks.
Moore's Anti-Friction 5 in. Wheel.		W dos \$12.00.
<i>Pumps.</i>		
Cistern, Best Makers.		.00¢ to 50¢ to 10¢.
Pitcher Spout, Best Makers.		.07¢ to 7¢.
Pitcher Spout, Cheaper Goods.		.00¢ to 7¢.
<i>Punches.</i>		
Saddlers' on Drive, good.		W dos .00¢ to 50¢.
Bemis & Call Co.'s Cast Steel Drive.		50¢ to 10¢.
Bemis & Call Co.'s Springfield Socket.		50¢ to 10¢.
Spring, good quality.		W dos \$2.50 to 5¢.
Spring, Leach's Pat.		15¢.
Bemis & Call Co.'s Spring and Check.		40¢.
Solid Timmers' B. S. & W. Co.		W dos \$1.44.
Tim'r Hollow Punches F. S. & W. Co.		20¢.
Rice Hand Punches.		15¢.
Avery's Revolving.		40¢.
Avery's Saw-Set and Punch. See Saw Sets.		
<i>Rail.</i>		
Sliding Door, Wr't Brass.		W dos 25¢.
Sliding Door, Bronzed Wr't Iron.		W ft. 7¢.
Sliding Door, Iron, Painted.		W foot 4¢, 10¢.
Barn Door Sliding.		Per 100 feet.
B. D. for N. E. Hangers.		\$2.00 to 2.50 to 3.10, 10¢.
<i>Rails.</i>		
Cast Steel, Association goods.		70¢.
Cast Steel, outside goods.		60¢ to 10¢ to 10¢.
<i>Rake.</i>		
Cast Steel, Asso.		Cast Steel.
Cast Steel, outside goods.		60¢ to 10¢ to 10¢.
<i>Razors.</i>		
J. R. Torrey Razor Co.		20¢.
Westonen and Butcher.		\$10.00 to 2¢.
Jordan's AA1, list Nov. 1, 1889.		10¢.
Jordan's Old Faithful, list Nov. 1, '89.		50¢.
Electric.		List net.
<i>Razor Strops.</i> —See Strops, Razor.		
<i>Rings and Ringers.</i>		
Bull Rings.		
Union Nut Co.		50¢.
Sargent's.		60¢ to 10¢ to 10¢.
Hotchkiss' low list.		30¢.
Humason, Beckley & Co.		70¢ to 10¢.
Feek, Stew & W. Co.		50¢ to 10¢ to 10¢.
Ellrich Hd. Co., White Metal low list.		50¢ to 10¢.
<i>Rings.</i>		
Top of the Hill Ringers.		.00¢ to 20¢.
Top of the Hill Rings.		10¢ to 15¢.
Hill's Improved Ringers.		10¢ to 15¢.
Hill's Old Style Ringers.		10¢ to 12.5¢.
Hill's Tonga.		10¢ to 12.5¢.
Hill's Rings.		W dos bxs \$2.15 to 2.25.
Perfect Rings.		W dos 2.15¢ to 2.25¢.
Perfect Ringers.		W dos 2.15¢ to 2.25¢.
Blair's Hog Ringers.		W dos 2.25¢ to 2.50¢.
Blair's Hog Rings.		W dos 2.25¢ to 2.50¢.
Champion Ringers.		W dos 2.25¢ to 2.50¢.
Champion Rings, Double.		W dos 2.25¢ to 2.50¢.
Brown's Ringers.		W dos 2.25¢ to 2.50¢.
Brown's Rings.		W dos 2.25¢ to 2.50¢.
<i>Rivets and Burrs.</i>		
Iron, list Nov. 17, '87.		
Copper.		50¢ to 10¢.
Coppered Iron, Be'time Brand.		40¢ to 10¢.
<i>Rivets Sets.</i> —See Sets.		
<i>Rods.</i>		
Stair, Brass.		25¢ to 25¢.
Stair, Black Walnut.		W dos 40¢.
<i>Rollers.</i>		
Barn Door, Sargent's list.		50¢ to 10¢ to 10¢.
Acme Moore's Anti-Friction.		50¢.
Union Barn Door Roller.		70¢.
<i>Rope.</i>		
Manufacturers' prices:		
Manila, 1/4 in. and larger.		W dos 15¢ to 15¢.
Manila, 1/4 and 5/16 in.		W dos 15¢ to 15¢.
Manila Tarred Rope.		W dos 14¢ to 14¢.
Manila, Hay Rope.		W dos 15¢ to 15¢.
Sisal, 1/4 inch and larger.		W dos 12¢ to 12¢.
Sisal, 1/4 and 5/16 in.		W dos 12¢ to 12¢.
Sisal, Tarred Rope.		W dos 11¢ to 11¢.
Cotton Rope.		W dos 15¢ to 15¢ net.
Jute Rope.		W dos 7¢ to 7¢.
List May 1, 1886.		
Iron.		20¢ to 24¢.
Iron, Galvanized.		10¢ to 24¢.
Cast Steel.		40¢ to 24¢.
<i>Rules.</i>		
Boxwood.		.50¢ to 10¢ to 50¢ to 10¢.
Ivory.		50¢ to 50¢ to 10¢.
Starrett's Rules and Straight Edges.		25¢ to 25¢.
<i>Saws.</i>		
Dixton's Circular.		45¢.
Dixton's Cross Cuts.		45¢.
Dixton's Hand.		20¢.
Woodrough & C. Parlin.		
Hand, Panel and Rip.		
Narrow Champion Cross Cuts with Handles.		20¢.
Champion Thin Back Cross Cuts, 2¢.		foot.
Champion Extra Thin Back Cross Cuts.		2¢.
One Man Champion Cross Cuts.		31¢.
Narrow Champion Cross Cuts with Handles.		30¢.
Hand, Panel and Rip.		20¢.
Narrow Champion Cross Cuts with Handles.		20¢.
Champion Thin Back Cross Cuts, 2¢.		foot.
Champion Extra Thin Back Cross Cuts.		2¢.
One Man Champion Cross Cuts.		31¢.

July 31, 1890

Akins' Circular Shingle and Heading		50¢
Atkins' Silver Steel Diamond X Cuts		50¢
Atkins' Special Steel Dexter X Cuts		50¢
Atkins' Special Steel Diamond X Cuts		50¢
Atkins' Champion and Electric Tooth X Cuts		50¢
Atkins' Hollow Back X Cuts.		50¢
Atkins' Mulay, Mill and Drag.		40¢
Atkins' One-Man Saw, with handles.		25¢
Peace Circular and Mill.		45¢
Peace Hand Panel and Rip.		25¢
Peace Cross Cut.		45¢
Richardson's Circular and Mill.		45¢
Richardson's X Cuts.		45¢
Richardson's Hand, &c.		25¢
 Hack Saws—		
Griffin's, complete.		40&10/50¢
Griffin's Hack Saw, Blades.		40&10/50¢
Star Hack Saws and Blades.		25¢
Europes and Crescent.		25¢
 Scroll—		
Lester, complete, \$10.00.		25¢
Rogers, complete, \$4.00.		25¢
Barnes' Builders' and Cabinet Makers', \$15.		25¢
Barnes' Scroll Saw Blades.		35¢
 Saw Frames—See Frames, Saw.		
Saw Sets—See Sets, Saw.		
Saw Tools—See Tools, Saw.		
 Scales—		
Hatch, Counter, No. 171, good quality.		\$ doz \$21.00
Hatch, Tea, No. 161. \$ doz \$6.75/8¢/90		
Union Platform, Plain.		20&10/22¢
Union Platform, Striped.		22&20/28¢
Chatillon's Grocers' Trip Scales.		50¢
Chatillon's Crescents.		25¢
Chatillon's Favorite.		40¢
Family Turnballs.		30¢/30¢/10¢
Riegle Bros.' Platform.		40¢
 Scale Beams—See Beams, Scale.		
Scissors, Fluting.		45¢
 Scrapers—		
Adjustable Box Scraper (S. R. & L. Co.)		\$ doz
Box, 1 Handle.		50¢/doz \$6.00/10¢
Box, 2 Handle.		50¢/doz \$6.00/10¢
Defiance Box and Ship.		20&10/28¢
Foot.		50¢/doz \$6.65
Ship, Common.		50¢/doz \$3.50 net
Ship, R. I. Tool Co.		10¢
 Screen Window and Door		
Frames—See Frames.		
Screw Drivers—See Drivers, Screw.		
Screws.		
 Bench and Hand—		
Bench, Iron.		55&10/55&10/40&10%
Bench, Wood, Beech.		50¢/doz \$2.25
Bench, Wood, Hickory.		20&10/20¢
Hand, Wood.		25&10/25&10/8&5¢
Lag, Blunt Point, list Jan. 1, 1880.		75¢/doz \$7.50/10¢
Couch and Lag, Gimlet Point, list Jan. 1, 1880.		75¢/doz \$7.50/10¢
Bed.		25&10/25&10/8&5¢
Hand Rail, Sargent's.		60¢/doz \$1.10¢
Hand Rail, H. & B. Mfg. Co.		70¢/doz \$1.05¢
Hand Rail, Am. Screw Co.		75¢
Jack Screws, Millers Falls list.		50¢/doz \$0.85¢
Jack Screws, P. S. & W.		35¢
Jack Screws, Sargent.		60&10/10/60&10/5¢
Jack Screws, Stearns'.		40&10/40/10¢
 Cork—		
Humason & Beckley Mfg. Co.		40&10/50¢
Williamson's.		33¢/doz \$3.50/5¢
Howe Bros. & Hubert.		35¢
 Machine—		
Flat Head, Iron.		55¢
Round Head, Iron.		50¢
Wood—		
List March 1, 1880.		
Flat Head Iron.		50¢
Round Head Iron.		40¢
Flat Head Brass.		45¢ Extra
Round Head Brass.		35¢ 5 @ 10 %
Flat Head Bronze.		45¢ often given.
Round Head Bronze.		35¢
Rogers' Drive Screws.		66¢/doz
 Scroll Saws—See Saws, Scroll.		
Scythe Snaths—See Snaths, Scythe.		
Sets.		
 Awl and Tool.		
Aiken's Sets, Awls and Tools,		
No. 20, \$ doz \$10.00.		55&10/
Fray's Adj. Tool Hds., Nos. 1, 12; 2, 18;		5; 32; 4; 30.
Miller's Falls Adj. Tool Hds.		25&25/10/10¢
Non. 1, \$12. 2, \$18.		25¢
Hend. Combination Hafft.		50¢/doz \$0.50
Stanley's Excelsior:		
No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50.		30&10¢
 Nail—		
Square.		5 gr. \$4.00/8¢/25¢
Round.		5 gr. \$3.25
Buck Bros.		27/35
Cannon's Diamond Point..		57, \$12, 20¢
 Rivet.		
Regular list.		50&10¢
 Saw—		
Stillman's Genuine..		5¢ doz \$5.00/7.75,
Stillman's Imita.		40&5¢
Square.		40&5/40&10/5¢
Common Lever.		5¢ doz \$2.00, 40&5¢
Morrill's No. 1, \$15.00; Nos. 3&4, \$21.00.		40&10/50¢
Leach's.. No. 0, \$8.00; No. 1, \$15, 15&20¢		
Nash's..		20&10/20&10/10&10¢
 Hammer, Hotchkiss.		55, 50, 10¢
Hammer, Bemis & Call Co.'s New Pat.		30&5¢
Bemis & Call Co.'s Lever and Spring Hammer.		30&5¢
Bemis & Call Co.'s Plate.		10¢
Bemis & Call Co.'s Cross Cut.		12&15¢
Aiken's Genuine.		15.50, \$62.10¢
Aiken's Imitation.		7.00, 55&5¢
Hart's Pat. Lever.		20¢
Diston's Star.		25¢
Leopold's.		40&10/40/50¢
Aiken's Lever.		5¢ doz \$6.00, 60¢
Aiken's Criterion.		5¢ doz No. 1, 15¢
Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00.		60¢/doz
Avery's Saw Set and Punch.		60¢
Chieftain II. R. Co.'s Superior.		5¢ doz \$15, 50¢
 Sharpeners, Knife.		
Parkin s.		
Applewood Handles.		5¢ doz \$6.00, 40¢
Rosewood or Cocobolo.		5¢ doz \$9.00, 40¢
 Shaves, Spoke.		
Iron.		45¢
Wood.		30¢
Bailey's (Stanley R. & L. Co.).		40&10/15¢
Stearns'.		30&10¢
Cincinnati.		25&10¢
 Shears—		
American (Cast) Iron.		75&10/75&10/5¢
Barnard's Lamp Trimmers.		5¢ doz \$3.75
Tinners'.		20&25¢
Seymour's, List, Dec. 1881.		60&10/10/60&10/10/5¢
Heinisch's, List, Dec. 1881.		60&10/10/60&10/10/5¢
First Quality C. S. Trimmers.		30¢/doz \$0.10¢
Second quality C. S. Trimmers.		80&10/80&10/10/10¢
Acme Cast Shears.		10&10¢
Diamond Cast Shears.		10¢
Clipper.		10&10¢
Victor Cast Shears.		75&10/65&75&10/45¢
Bowe Bros. & Hulbert, Solid Forged Steel.		40¢
Chicago Drop Forge & F. Co., Solid Steel Forged.		60¢
Claus Shear Co., Japanned.		70¢
Claus Shear Co. Nickled, same list.		60¢
Electric.		List net
 Pruning Shears and Hooks.		
Diston's Combined Pruning Hook and Saw.		5¢ doz \$18.00, 20&10/10¢
Diston's Pruning Hook.		5¢ doz \$12.00, 20&10/10¢
E. S. Lee & Co.'s Pruning Tools.		10&10¢
Pruning Shears, Henry's Pat.		5¢ doz \$3.75¢
Henry's Pruning Shears.		45¢/doz \$4.25¢
Wheeler, M. & C. Co.'s Combination.		4.50 net
Wheeler, M. & C. Co.'s Combination.		5¢ doz \$12.00, 20¢
Dunlap's Saw and Chisel.		5¢ doz \$8.50, 30¢
J. Mallinson & Co., No. 1, \$5.25; No. 2, 7.25		
P. S. & W. Co.		60¢/doz
Tinner's, &c.—		
Shears and Snips (P. S. & W.).		20&25¢
Snips, J. Mallinson & Co.		33&5¢
 Sheaves—		
Sliding Door—		
M. W. Co., list July, 1888.		50&10/60/60/5¢
R. E. & L. Co., Dec. 15, 1888.		55&20¢
Corbin's list.		60&10/60/25¢
Patent Roller.		60&10/60/25¢
Patent Roller, Hatfield's.		75¢
Russell's Anti-Friction.		60&10/60/25¢
Sliding Shutter—		
R. & E. list Dec. 18, 1885.		60&10/10/25¢
Sargent's list.		60&10/10/25¢
Reading list.		60&10/10/25¢
 Ship Tools—		
L. & I. J. White.		20&25¢
 Shoes, Horse, Mule, &c.—		
Horse—		
Burden's, Perkins' Phoenix, at factory.		
Mule—		
Add \$1 & 1/2¢ to above prices.		\$1.00
 Ox, Wrought—		
Ton lots.		5¢ B 9¢
1000 lb. lots.		5¢ B 9¢
500 lb. lots.		5¢ B 10¢
 Shot—		
(Eastern prices 2¢ off, cash, 5 days.		
Drop, 5¢ bag, 25 lb.		1.35
Drop, 5¢ bag, 5 lb.		.32
Buck and Chilled, 5¢ 25 lb. bag.		1.60
Buck and Chilled, 5¢ 5 lb. bag.		.37
 Shovels and Spades—		
Ames' Shovels, Spades, &c., list Nov. 1, 1885.		20¢
NOTE.—Jobbers frequently give 5¢/7.5¢ extra on above.		
Griffith's Black Iron.		50&10/10¢
Griffith's C. S.		60&60/10/10¢
Griffith's Solid C. S. R. R. Goods.		20¢
Old Colony (Sand) Fork & Tool Co.		35¢
St. Louis Shovel Co.		30&20/25/35¢
Bynum, Binnis & Co.		15&25¢
Hubbard & Co.		20&20/25/35¢
Lehigh Mfg. Co.		50&10/10¢
Payne Pettebone & Son, list January, 1886.		30¢
Remington-Lowman's Pat.		50&10/60/60¢
Rowland's, Black Iron.		50&10/10¢
Rowland's Steel.		50&10/60/60¢
 Shovels and Tongs—		
Iron Head.		60&10/60/10/5¢
Brass Head.		60&10/60/10/5¢
 Sieves—		
Mann's Tin Rim.		50&25¢
Buffalo Metallic, S. S. & Co.		50&25¢
Shaker (Barler's Pat.) Flour Sifters.		5¢ doz \$2.00; 5¢ gr. \$2.00/1.50
Electric.		5¢ doz \$2.00
A. & W. B. sifters.		5¢ doz \$2.00
Hunter's.		5¢ doz \$2.00
Smith's Adjustable Sifters.		5¢ doz \$2.00
 Standard Fiber Ware—See Ware, Standard Fiber.		
Staples.		
Blind—		
Barbed, 5¢ in. and larger.		5¢ B 70/75¢
Barbed, 5¢ in.		5¢ B 50/55¢
 Fence Staples, Galvanized.		Same price
Fence Staples, Plain.		as B'w'ire
See Trd. Reg.		
 Steelyards.		40&10/50¢
 Stocks and Dies—		
Blacksmith's Waterford Goods.		40&40/10/10¢
Butterfield's Goods.		40&40/8/10/10¢
Lightning Screw Plate.		25&30¢
Reece's New Screw Plates.		35&40/45&40¢
Reversible Ratchet.		30¢
Gardner.		25¢
 Stops, Bench.		
Morrill's.		5¢ doz \$9.00/10/10¢
Hotchkiss's.		5¢ doz \$5, 10c/10&10/10¢
Weston's, No. 1, \$10; No. 2, \$25. 25&10/5&10/5¢		
McGill's.		5¢ doz \$3, 10¢/10/10¢
Cincinnati.		25&10/10¢
 Stone—		
Hindostan No. 1, 3¢; Axe, 34¢; Slips No. 1, 4¢.		
Sand Stone.		5¢ B 21¢
Washtita Stone, Extra.		5¢ B 21/2¢
Washtita Stone, No. 1.		5¢ B 15/16¢
Washtita Stone, No. 2.		5¢ B 11/12¢
Washtita Slips, No. 1, Extra.		5¢ B 7/4¢/10¢
Washtita Slips, No. 1.		5¢ B 25/26¢
Arkansas Stone, No. 1, 4 to 6 in.		5¢ B 1.50/1.50¢
Arkansas Stone, No. 1, 6 to 9 in.		5¢ B 1.85/1.85¢
Turkey Oil Stone, 4 to 8 in.		5¢ B 40¢
Turk Slip.		5¢ B 11.00/11.50¢
Lake Superior, Chase.		5¢ B 16¢
Lake Superior Slips, Chase.		5¢ B 31/32¢
Seneca Stone, Red Paper Brand.		5¢ B
Seneca Stone, High Rounds.		18/20¢
Seneca Stone, Small Whets.		5¢ gro \$24.00
 Stove Polish—See Polish, Stove.		
Stretchers, Carpet.		
Cast Steel, Polished.		5¢ doz \$2.25
Cast Iron, Steel Points.		5¢ doz \$0.75
Solder.		5¢ doz \$1.75
Willard's.		5¢/doz \$2.10/10¢
 Strrops, Razor—		
Genuine Emerson.		60&60/55¢
Imitation.		5¢ doz \$2.00, 20&10/45/55¢
Torrey's.		20¢
Belgrave's Belt and Com.		5¢ doz \$2.00
Lamont Combination.		5¢ doz \$4.00
Jordan's Pat. Padded, list Nov. 1, '89.		50¢
Electric.		List net
 Stuffers or Fillers, Sausage—		
Miles' "Challenge," 5¢ doz \$20, 50&50/50&50¢		
Perry.		5¢ doz No. 1, \$15.00; No. 6, \$21.00
Draw Cut No. 4, each \$30.00.		50&50/50&50¢
Enterprise Mfg. Co.		20&21/100/30¢
Silver's.		40&10¢
 Sweepers, Carpet.		
Bissell No. 5.		5¢ doz \$17.00
Bissell No. 7 New Drop Pan.		5¢ doz \$19.00
Bissell, Grand.		5¢ doz \$36.00
Grand Rapids.		5¢ doz \$24.00
Crown Jewel, No. 1.		5¢ doz \$18.00; No. 2.
Magic.		5¢ doz \$19.00; No. 3, \$20.00
Jewel.		5¢ doz \$15.00
Improved Parlor Queen.		5¢ doz \$17.00
Nickel.		5¢ doz \$27.00
Japanned.		5¢ doz \$24.00
Excelsior.		5¢ doz \$22.00
Garland.		5¢ doz \$22.00
Parlor Queen.		5¢ doz \$24.00
Housewife's Delight.		5¢ doz \$24.00
Queen.		5¢ doz \$11.00
Boardman's Nickel Silver.		5¢ doz \$11.00
Boardman's Britannia Spoons, case lots.		50&50/50¢
 Springs, Door.		
Torrey's Rod, regular size.		5¢ doz \$1.30
Gray's, 5 gr.		20¢
Bee Rod, 5 gr.		\$20.00
Warner's No. 1, 5¢ doz \$2.50; No. 2, \$3.80.		20¢
Gem (Coil), list April 19, 1886.		10¢
Star (Coil), list April 19, 1886.		20¢
Victor (Coil), list April 19, 1886.		20¢
Champion (Coil), 60¢/doz \$6.00/10&10/10¢		
Philadelphia 8 in., \$5.00; 8 in., \$7.75.		
Cowell's, No. 1, \$ doz \$15.00; No. 2, \$ doz \$15.00.		
Roden, complete, 5¢ doz \$1.50.. 55&51/10/10¢		
Hermies.		50¢/doz \$1.50/1.50¢
Shaw Door Check and Spring.		25&30/30&30/35¢
Elliptic, Concord, Platform and Half Scroll.		50¢/doz \$6.55
Clift's Bolster Springs.		25¢
 Squares—		
Steel and Iron.		5¢ doz \$10/10¢
Nickel-Plated.		5¢ doz \$10/10¢
Try Square and T Bevels.		50¢/doz \$10/10¢
Diston's Try Square and T Bevels.		50¢/doz \$10/10¢
Winterbottom's Try and Miter.		50¢/doz \$10/10¢
Starrett's Micrometer Caliper Squares.		25¢
Avery's Flush Bevel Squares.		25¢
Avery's Bevel Protractor.		50¢
 Squeezers.		
Fodder.		5¢ doz \$2.00
Blair's.		5¢ doz \$1.25
Blair's "Climax."		5¢ doz \$1.25
 Lemon—		
Bill.		5¢ doz \$2.50
Gimp.		5¢ doz \$2.50
Jimp.		5¢ doz \$2.50
Gimp and Lace Tacks.		5¢/doz \$1.70
Gimp and Lace Tacks, S. S.		5¢/doz \$1.70
Swedes Iron Basket or Trimmers' Tacks.		5¢/doz \$1.70
Tacks, Lanc.		5¢/doz \$1.70
Miner's Tacks, S. S.		5¢/doz \$1.70
Lanc. Swedes' Tacks.		5¢/doz \$1.70
Lanc. Swedes' Tacks.		5¢/doz \$1.70
Copper Tacks.		5¢/doz \$1.70
Copper Finish. & Trunk Nails.		5¢/doz \$1.70
Cigar Box Nails.		5¢/doz \$1.70
Picture Frame Points.		5¢/doz \$1.70
Looking-Glass Tacks.		5¢/doz \$1.70
Brush Tacks.		5¢/doz \$1.70
Tin-Capped Trunk Nails.		5¢/doz \$1.70
Finishing Nails.		5¢/doz \$1.70
Trunk and Clout Nails, Black and Tinned.		5¢/doz \$1.70
Common and Patent Brads.		5¢/doz \$1.70
Hungarian Nails.		5¢/doz \$1.70
Basket and Chair Nails.		5¢/doz \$1.70
Leathered Carpet Tacks.		5¢/doz \$1.70
 Miscellaneous—		
Double-Pointed.		5¢/doz \$1.70
Wire Carpet Nails.		5¢/doz \$1.70
Plymouth Rock Steel Carpet Tacks.		5¢/doz \$1.70

Wire Brads & Nails, see Nails, Wire.
Steel-Wire Brads, R. & E. Mfg. Co.'s list.....
Tap Borers —See Borers, Tap.
Tapes, Measuring
American..... \$34-\$34.25
Spring..... 40c
Chesterman's, Regular list..... 28c-30c
Thermometers
In Case..... .80-\$0.80-10c
Thimble Skeins —See Skeins.
Ties, Bale- Steel
Standard Wire, list..... .50 & 10c
Tinners' Shears, &c. —See Shears, Tinner's, &c.
Tinware
Stamped, Jappanned and Pieced, list Jan. 20 1887..... .70 & 10c
Tire Benders, Upsetters, &c. —See Benders and Upsetters, Tire.
Tools.
Coopers' —
Bradley's..... .90c
Barton's..... .20c & 20c-5c
L. & I. J. White..... 20c-5c
Albertson Mfg. Co.30c
Beatty's..... .30c
Sandusky Tool Co.30c & 30c-5c
Shaves, Cincinnati Tool Co.20c
Lumber
Ring Peavies, "Blue Line"..... # dos \$20.00
Ring Peavies, Common..... # dos \$18.00
Steel Socket Peavies..... # dos \$21.00
Hall, Mall, Socket Peavies..... # dos \$19.00
Cant Hooks, "Blue Line"..... # dos \$16.00
Cant Hooks, Common Finish, #dos \$14.00
Cant Hooks, Mall, Socket Clasp, "Blue Line" Finish..... \$16.00
Cant Hooks, Mall, Socket Clasp, Common Finish..... # dos \$14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish..... # dos \$14.00
Cant Hooks, Clip Clasp, Common Finish..... # dos \$12.00
Hand Spikes..... # dos 6 ft., \$15.00; 8 ft., \$20.00
Pike Poles, Pike & Hook, # dos, 12 ft., \$11.50; 14 ft., \$12.50; 16 ft., \$14.50; 18 ft., \$17.50; 20 ft., \$21.50.
Pike Poles, Pike only, # dos, 12 ft., \$10.00; 14 ft., \$11.00; 16 ft., \$13.00; 18 ft., \$16.00; 20 ft., \$20.00.
Pike Poles, not ironed, # dos, 12 ft., \$10.00; 14 ft., \$7.00; 16 ft., \$9.00; 18 ft., \$12.00; 20 ft., \$16.00.
Setting Poles, # dos 12 ft., \$14.00; 14 ft., \$15.00; 16 ft., \$17.00
Swamp Hooks..... # dos \$18.00
Saw
Atkins' Perfection..... # dos \$12.00
Atkins' Excelsior..... # dos \$6.00
Atkins' Giant..... # dos \$4.00
Tobacco Cutters —See Cutters, Tobacco.
Transom Lifters — See Lifters, Transom.
Traps
Game
Newhouse..... 40c & 40c-5c
Oneida Pattern..... .70c & 10c
Game Blake's Patent..... 40c & 10c
Mouse and Rat
Wood, Cooker, # dos holes, 11c-12c
Mouse, round, "Wire"..... # dos \$1.50, 10c
Mouse, Cone, "Wire"..... # dos \$2.50, 10c
Mouse, Catch-'em-alive..... # dos \$2.50, 15c
Mouse, Bonanza..... # gr \$1.00
Mouse, Delusion..... # gr \$10.00-\$12.00
Rat, Decoy..... # gr \$10.00, 10c
Ideal..... # gr \$10.00
Cyclone..... # gr \$5.25
Hotchkiss Metallic Mouse, 5-hole traps, # dos, 90c; in full cases, # dos..... .75c
Hotchkiss Imp. Rat Killer..... # gro \$18.50
Hotchkiss New Rat Killer..... # gro \$16.50
Schuyler's Rat Killer..... # gro \$15.00
Triers
Butter and cheese..... .25c
Trimmers, Spoke
Bonney's..... # dos \$10.00, 50c
Stearns'..... .20c & 10c
Ives', No. 1, \$15.00; No. 2, \$12.00..... .90c
Douglas'..... # dos \$9.00, 20c
Cincinnati..... .25c
Trowels
Lothrop's Brick and Plastering, 20c & 10c & 5c
Reed's Brick and Plastering..... .15c
Dixon's Br'k and Plastering..... .25c
Peace's Plastering..... .25c
Clement & Maynard's..... .20c
Rose's Br'k..... .15c & 20c
Brade's Br'k..... .25c
Worrall's Br'k and Plastering..... .20c
Garden..... .70c
Trucks, Warehouse, &c.
B. & L. Block Co.'s list, '82..... .40c
Tubes, Boiler
See Pipe.
Twine
Fax Twine —
BC. B.
No. 9, 14 and 16 Balls..... .25c .31c
No. 12, 16 and 20 Balls..... .25c .39c
No. 16, 24 and 32 Balls..... .25c .32c
No. 24, 32 and 40 Balls..... .25c .32c
No. 36, 48 and 60 Balls..... .25c .32c
No. 264, Mattress, Mand 1/2 Balls..... .50c .64c
Chalk Line, Cotton, 1/2 Balls..... .25c
Mason Line, Liners, 1/2 Balls..... .55c
2-Ply Hemp, 1/2 and 1 Balls (Spool)..... .15c .44c
2-Ply Hemp, 1/2 Balls..... .15c .44c
2-Ply Hemp, 1/4 Balls..... .15c .44c
Cotton Wrapping, 5 Balls to 1..... .15c & 16c
2, 3, 4 and 5 Ply Hemp, 1/2 Balls..... .10c .30c
Paper..... .15c .44c
Cotton Mops, 6, 9, 12 and 15 B to dos, .18c
Vises
Solid Box..... .50 & 10c & 50c & 10c-5c
Parallel
Fisher & Norris Double Screw..... .15 & 10c
Stephens'..... .25 & 30c
Parker's..... .20 & 25c
Wilson's..... .55c
Howard's..... .40c
Bonney's..... .40c & 10c
Millers Falls..... .40c & 10c
Trenton..... .40c & 10c
Merrill's..... .15c & 20c
Sargent's..... .30c & 10c
Backus and Union..... .40c
Double Screw Leg..... .15c & 10c
Prentiss'..... .20 & 25c
Simpson's Adjustable..... .40c
Moore's..... .30c
Save Pliers
Bonney's, Nos. 2 & 3, \$15.00..... .40c & 10c
Stearns'..... .33c & 10c & 35c
Stearns' Silent Saw Vises..... .33c & 35c
Sargent's
Household, # dos \$17.50, 10c
Bedding, # dos \$17.50, 10c
Wentworth, # dos \$20.00, 10c
Combination Hand Vises, # gr \$42.00
Cowell Hand Vises, # dos \$25.00
Bauer's Pipe Vises, # dos \$25.00
Cincinnati, # dos \$21.00
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Combination Hand Vises, # gr \$42.00
Cow

PAINTS, OILS AND COLORS.—Wholesale Prices.

Animal and Vegetable Oils.					
Linseed, City, raw...per gal.	62	64	Cylinder, dark, filtered...	14	20
Linseed, City, boiled...	59	60	Cylinder, dard, st'm refined	10	18
Linseed, Western, raw...	59	60	Paraffine, 23% G.S. gravity	11	12
Lard, City, Extra Winter...	..	51	Paraffine, 25 gravity.....	10	11
Lard, City, Prime...	..	50	Paraffine, 28 gravity.....	8	9
Lard, City, Extra No. 1...	45	46	Paraffine, red, 21 @ 25 grty	14	14
Lard, City, No. 1...	42	43	Paraffine, red, 25 @ 25 grty	12	13
Lard, Western, prime...	49	50			
Cotton-seed, Crude, prime...	..	30			
Cotton-seed, Crude, off grades...	22	26			
Cotton-seed, Summer Yellow, prime...	..	36			
Cottonseed, Summer Yellow, off grades...	30	34	Barytes, Prime White.....	ton \$22.00	22.50
Sperm, Crude...	67	67	Barytes, Amer. refined... 30.00	..	..
Sperm, Natural Spring...	67	69	Barytes, Amer. No. 1... 18.00	..	..
Sperm, Bleached Spring...	72	74	Barytes, Amer. No. 2... 16.00	..	..
Sperm, Natural Winter...	74	77	Barytes, Amer., off-color 13.00	..	15.00
Sperm, Bleached Winter...	79	82	Blue, Celestial..... ♦ D	54	74
Whale, Crude...	..	45	Blue, Chinese.....	45	50
Whale, Natural Winter...	49	50	Blue, Prussian.....	20	35
Whale, Bleached Winter...	51	52	Blue, Ultramarine.....	7	25
Whale, Extra Bleached...	54	55	Brown, Spanish.....	34	1
Sea Elephant, Bleached Winter...	60	62	Brown, Vandyke, Amer.	3	34
Menhaden, Crude, Sound...	21	23	Brown, Vandyke, English.....	6	8
Menhaden, Crude, Southern...	..	..	Black, American Drop... 8	8	10
Menhaden, Light Pressed...	26	28	Black, English Drop... 12	12	14
Menhaden, Bleached W'ter...	32	33	Black, Frankfort, Drop... 5	5	18
Menhaden, Extra Bleached...	35	36	Black, Lamp, common... 13	12	18
Tallow, City, prime...	..	45	Black, Lamp, medium... 10	9	25
Tallow, Western, prime...	..	..	Black, Lamp, prime... 27	27	33
Cocoonut Ceylon...	63	64	Carmine, No. 40, in bulk... 3.10	..	..
Cocoonut, Cochin...	..	74	Carmine, No. 40, in boxes or barrels...	3.20	..
Cod, Domestic...	82	83	Carmine, No. 40, in ounce bottles...	4.20	..
Cod, Foreign...	33	34	Chalk, in bulk... ton 1.75	..	2.00
Red Elaine...	31	34	Chalk, in bbls. #100 lb 30	..	35
Red Saponified...	..	44	China Clay, English.....	ton 13.50	18.00
Bank...	..	..	China Clay, Southern... 10.00	..	11.50
Straits...	26	28	Cobalt Oxide, prep'd... 2.90	..	..
Olive, Italian, bbls...	81	83	Cobalt Oxide, black... lots 100lb 2.00	..	..
Palm, prime, Lagos...	54	54	Cobalt, Oxide, black... less 100lb 2.65	..	..
Mineral Oils.			Crocus Martius, Engl. ♦ B.	14	24
Black, 29 gravity, 25 @ 30 cold test,... per gal	8	9	Crocus, American... 14	24	24
Black, 29 gravity, 15 cold test...	81	94	Green, Paris, in bulk... 14	..	14
Black, 29 gravity, summer...	..	..	Green, Paris, 170 @ 175 lb kgs...	14	15
Cylinder, light, filtered...	..	9	Green, Paris, small pack... 16	21	21
			Green, Chrome, ordinary... 8	..	13
			Green, Chrome, pure... 20	..	25
			Lead, Eng. R.R. white... 9	..	10
			Lead, Amn. White, dry or in oil: Kegs, lots 1000 lbs to 1000 B...	7	..
			Kegs, lots 1000 lbs to 8 tons...	6	..
			Kegs, lots 1000 lbs to 5 tons...	6	..
			Umber, Turkey, R.W Amer. ...	14	14
			Umber, Turkey, R.W Limp. ...	14	14
			Umber, Turkey, Bat. Amer. ...	14	14
			Umber, Turkey, Bat. and Powd. ...	34	4
			Umber, Turkey fat.Ln ...	34	3
			Powdered, ...	34	..
			Umber, Turkey, Raw and Powdered, ...	34	..
			Umber, Turkey, R.W Limps ...	14	24
			Umber, Turkey, Irish...	12	..
			Glue.		
			Low Grade.... ♦ D	8	10
			Cabinet, ...	12	25
			Medium White, ...	12	15
			Extra White, ...	17	20
			French, English, ...	9	20
			Irish, ...	10	15
				12	12

CURRENT METAL PRICES.

JULY 30, 1890.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.**Bar Iron from Store.**

Common Iron:	
$\frac{3}{4}$ to 2 in. round and square..	per lb. 2.00 @ 2.10¢
1 to 6 in. x $\frac{3}{4}$ to 1 in.....	per lb. 2.00 @ 2.10¢
1 to 6 in. x $\frac{3}{4}$ to 1 in.....	per lb. 2.20 @ 2.30¢
1 to 6 in. x $\frac{3}{4}$ and 5-16.....	per lb. 2.40 @ 2.50¢
Rods— $\frac{3}{4}$ and 11-16 round and sq..	per lb. 2.30 @ 2.40¢
Bands—1 to 6 x 3-16 to No. 12....	per lb. 2.50 @ 2.60¢
"Burden Best" Iron, base price.	per lb. 3.00 @ 3.00¢
Burden's "H. B. & S." Iron, base price.....	per lb. 2.80 @ 2.80¢
"Ulster".....	per lb. 3.00 @ 3.00¢
Norway Bars.....	4.00 @ 4.00¢
Norway Shapes.....	5.00 @ 5.00¢

Merchant Steel from Store.

Per pound.	
Open-Hearth and Bessemer Machinery, For Calk, Tire and Sleigh Shoe, base price in small lots.....	25¢
Best Cast Steel, base price in small lots.....	8¢
Best Cast Steel Machinery, base price in small lots.....	5¢

Sheet Iron from Store.

Common American.	R. G. Cleaned.
10 to 16.....	per lb. 3.00 @ 3.00¢
17 to 20.....	per lb. 3.25 @ 3.25¢
21 to 24.....	per lb. 3.35 @ 3.35¢
25 and 36.....	per lb. 3.45 @ 3.45¢
27.....	per lb. 3.55 @ 3.63¢
28.....	per lb. 3.75 @ 4.25¢
B. B.	sd qual.
Galv'd, 14 to 20, per lb. 5.00 @ 5.00¢	4.73¢
Galv'd, 21 to 24, per lb. 5.37¢ @ 5.37¢	5.12¢
Galv'd, 25 to 28, per lb. 5.75 @ 5.75¢	5.50¢
Galv'd, 27.....	per lb. 6.19¢ @ 6.19¢
Galv'd, 28.....	per lb. 6.50 @ 6.23¢
Patent Planished.....	per lb. A 10¢ B. 9¢
Rustic.....	per lb. 0.66¢ @ 10¢
American Cold Rolled B. B.	per lb. 0.76¢ @ 7¢
Craig Polished Sheet Steel.....	per lb. 8.4¢

English Steel from Store.

Best Cast.....	per lb. 15¢
Extra Cast.....	per lb. 16¢ @ 17¢
Swaged, Cast.....	per lb. 16¢
Best Double Shear.....	per lb. 15¢
Blister, 1st quality.....	per lb. 12¢
German Steel, Best.....	per lb. 10¢
2d quality.....	per lb. 9¢
3d quality.....	per lb. 8¢
Sheet Cast Steel, 1st quality.....	per lb. 15¢
2d quality.....	per lb. 14¢
3d quality.....	per lb. 12.4¢
R. Muschet's "Special"	per lb. 45¢
" " "Titanic".....	per lb. 20¢

METALS.**Tin.**

	Per lb
Saxa, Pigs.....	25¢
Saxa, Pigs.....	25¢
Saxa in Bars.....	20¢

Tin Plates.

Charcoal Plates.—Bright.	Per box.
Molyn Grade.....	IC. 10 x 14. @ 36.25
".....	IC. 12 x 12. @ 6.50
".....	IC. 14 x 20. @ 6.25
".....	IC. 20 x 26. @ 12.75
".....	IX. 10 x 14. @ 7.75
".....	IX. 12 x 12. @ 8.00
".....	IX. 14 x 20. @ 7.75
".....	IX. 20 x 26. @ 15.50
".....	DC. 12½ x 17. @ 5.75
".....	DX. 12½ x 17. @ 7.25
Calicut Grade.....	IC. 10 x 14. @ 6.25
".....	IC. 12 x 12. @ 6.50
".....	IC. 14 x 20. @ 6.15
".....	IX. 10 x 14. @ 7.40
".....	IX. 12 x 12. @ 7.65
".....	IX. 14 x 20. @ 7.40
Allaway Grade.....	IC. 10 x 14. @ 5.85
".....	IC. 12 x 12. @ 5.50
".....	IC. 14 x 20. @ 5.35
".....	IC. 20 x 26. @ 10.75
".....	IX. 10 x 14. @ 6.50
".....	IX. 12 x 12. @ 6.65
".....	IX. 14 x 20. @ 6.50
".....	IX. 20 x 26. @ 13.25
".....	DC. 12½ x 17. @ 5.00
".....	DX. 12½ x 17. @ 6.00

Coke Plates.—Bright.

Steel Coke.—IC. 10 x 14, 14 x 20.	@ 35.12½¢
10 x 20.	7.25
20 x 26.	10.25
IX. 10 x 14, 14 x 20.	6.00
BV Grade.—IC. 10 x 14, 14 x 20.	@ 4.87½¢
Charcoal Plates.—Terne.	
Dean Grade.—IC. 14 x 20.	@ 45.00
20 x 26.	10.00
IX. 14 x 20.	5.80
20 x 26.	11.00
Alocane Grade.—IC. 14 x 20.	@ 4.85
20 x 26.	9.87
IX. 14 x 20.	5.81
20 x 26.	11.80

Tin Boiler Plates.

I XX. 14 x 26.....	112 sheets @ \$13.00
II XX. 14 x 28.....	112 sheets @ \$13.25
III XX. 14 x 31.....	112 sheets @ \$14.75

Copper.

Dury: Pig, Bar and Ingot, 4¢; Old Copper, 3¢ per lb. Manufactured (including all articles of which Copper is a component of chief value), 15¢ ad valorem.

Ingot.

Lake.....	@ 17½¢
Baltimore Grade.....	@ 15½¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, June 27, 1890, being quotations for all sized lots.

Not wider than	Weights per square foot and prices per pound.											
	Over 64 oz.	32	20	16	12	10	8	6	4	2	1	Less than
Not longer than	And longer than	64 oz.	50	32	26	20	16	12	10	8	6	oz.
30—72.....	25	25	26	27	28	30	32	34	36	38	40	33¢
30—72.....	25	25	25	27	29	33	36	38	40	42	44	30¢
35—96.....	25	25	26	28	30	34	36	38	40	42	44	30¢
35—96.....	25	25	27	29	31	35	38	40	42	44	46	30¢
40—96.....	25	25	28	30	32	36	38	40	42	44	46	30¢
40—96.....	25	25	28	30	32	36	38	40	42	44	46	30¢
40—96.....	25	25	28	30	32	36	38	40	42	44	46	30¢
40—96.....	25	25	28	30	32	36	38	40	42	44	46	30¢
Over 84 in. wide.....	28	30	—	—	—	—	—	—	—	—	—	—

All Bath Tub Sheets..... 16 oz. 14 oz. 12 oz. 10 oz.

Per pound..... 50.27 49.29 48.31 47.35

Bolt Copper, $\frac{1}{4}$ inch diameter and over, per pound..... 25¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 60 inches diameter, up to 96 inches diameter, inclusive, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 96 inches diameter, 6 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Segments and Pattern Sheets, 3 cents per pound advance over price of sheets required to cut them from.

Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, 1 cent per pound over the foregoing prices.

Cold or Hard Rolled Copper, lighter than 14 ounces per square foot, 2 cents per pound over the foregoing prices.

Tinning sheets on one side, 10, 12 and 14 x 48 each..... 8¢

Tinning sheets on one side, 30 x 60 each..... 30¢

For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each..... 15¢

For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each..... 12¢

For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each..... 12¢

Tinning sheets on one side, other sizes, per square foot..... 3¢

For tinning both sides double the above prices.

Planished Brass and Copper.

14 and 16 oz. and heavier. 31¢. By the case... 30¢ per lb.

12 oz. and lighter..... 33¢. By the case... 32¢ per lb.

14 x 48. 31¢. By the case... 30¢ per lb.

12 oz. and lighter..... 33¢. By the case... 32¢ per lb.

14 and 16 oz. and heavier. 44¢. 12 oz..... 37¢ per lb.

Seamless Brass and Copper Tubes.

O. G.	N. G.	36	34	32	30	28	26	24	22	20	18	16	14	12	10	8	6	4	2	1	1½
8-14	6-12	30	25	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15
15	18	40	35	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
16	14	41	36	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
17	15	42	37	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18
18	16	44	38	36	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18
19	17	45	39	37	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19
20	18	46	41	39	37	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20
21	20	48	43	41	39	37	35	34	33	32	31	30	29	28	27	26	25				